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THE JOURNAL OF COMMUNICATION

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THE NATIONAL SOCIETY FOR THE STUDY OF COMMUNICATION

A Publication Devoted to Communication in Human Relations

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THE PRESIDENT'S MESSAGE

Herold Lillywhite

This President's Message will attempt to do three things: (1) report on the state of the Society as the President sees it; (2) outline, in general terms, some of the plans, projects, and problems for the Society in the coming year; (3) outline the views of your President concerning what he conceives to be the changing nature of this Society and its role in the immediate and more distant future. In all of the discussion there will be no attempt to represent the viewpoint of anyone but the writer. It is a basic strength of the Society that these views are open to challenge by any member and that they undoubtedly will be challenged by those who feel the responsibility to do so. It is true also that these views will not in any way determine the future course of the Society unless and until they are accepted by the National Council and the membership.

The state of the society. The most significant impression that I brought away from the Cincinnati Convention was that the N.S.S.C. is growing up. In spite of spotty attendance at some of our sectional meetings (this was quite characteristic of the entire convention) and insufficient time to adequately take care of our business it seemed to me that a feeling of greater stability and maturity marked all of our proceedings. We still are groping and we still have many unsolved problems but we are attacking these problems with confidence and without the haste of insecurity. Another lasting impression was one of the quality of the people and the deliberations that took place. I attended all of our sectional meetings, business meetings, Council meetings, and numerous unscheduled sessions with smaller groups and individuals. In all of these I was constantly reminded that here were high quality persons, many with already established professional reputations for excellence and all with a great deal of ability and a wide range of interests, giving much time and energy to the Society and very serious thought to the solutions of our many problems. This entire experience gave me reason for great hope and considerable optimism concerning the future of the Society.

Outgoing President Elwood Murray could feel justly proud of the progress of the Society during the past year under his guidance. As the year ended, we could point to a number of positive accomplishments. Perhaps the coming of age of our constitution is as important as any. The work of Dr. Cable and his committee should be commended. As finally revised and adopted by the membership, the Constitution provides an excellent framework for our scope and activities. Work of many of the Study and Research committees during the past year can be highly commended. Some committees have completed important studies and are undertaking others. Other committees have made significant progress toward organizing and defining their areas for study. Committee reports in the November *Journal* make a splendid contribution to the study of communication. A few committees have failed to function, but decisive steps were taken and are being taken in

an attempt to remedy this situation. Committee structure changes are meaningful. One entirely new committee was formed to work in the area of Definition of the Nature, Scope and Functions of the Society. The old Elementary and Secondary Schools Committee was divided to make separate committees for each level. The committees on Propaganda and Mass Communication were combined into one committee.

Important progress was made in the development of regional communication chapters. Under the guidance of Elwood Murray, three local groups were brought into being and two others were projected. These are: Denver, organized by Elwood Murray; East Lansing, organized by Paul Bagwell; Southern California (Los Angeles area), organized by Martin Anderson and Charles Redding; Chapel Hill, North Carolina, to be organized by Earl Wynn; and Syracuse, New York, to be organized by Agnes Allardyce. These important grass-roots centers may be the most significant development we have yet seen with respect to the future of the Society.

A long step forward was achieved when the Executive Council of the Speech Association of America requested that the N.S.S.C. be represented hereafter on that Council. This recognition is important in that it perhaps signifies something as to our stability, suggests that we may be considered equally with other organizations affiliating with the parent organization, and certainly will make it much easier for us to work in closer unity with the SAA. It was important, too, to note that the dominant feeling among N.S.S.C. members at the convention was for continued close working relationships, within the SAA, with all groups and the parent organization. It seems to me that one aspect of our role in this relationship may be emerging: that of providing the framework, within SAA, for greater unity of all groups and many individuals. Since our Society cuts across all lines, we might be tremendously influential in healing some of the splinter wounds that were becoming so painful to many of us whose loyalty to the SAA is still paramount.

The Journal of Communication continued its previous excellence, but perhaps reached new levels last year. Tom Lewis may well be proud of his final issue. The Society owes Tom a great debt of gratitude for the work he did as the first Editor of this tremendously important publication.

During the year great progress was made in the area of sponsoring and organizing programs in communication in the various regional speech association conventions. N.S.S.C. provided programs for the Central States and Western Conventions last year. Programs are now being organized for inclusion in the Southern States, Western and Central States conventions for the current year.

Plans, Projects and Problems. It may be that this year would be a good time to consolidate the gains that have been made without initiating much new activity, but it has always seemed to me that a "consolidation period" too often is used as an excuse for lack of initiative and for doing nothing. Evidently the membership feels the same way, because a number of new projects were initiated at the convention and more will develop as the year goes by. We shall also attempt to "consolidate" as we move forward.

Perhaps most important of the new projects is the attempt to hold a summer Conference on Communication. The membership authorized the Council to establish a committee that would organize a summer conference between summer and fall school terms, at some reasonably central point, to provide an opportunity for some important thinking and study of some of the areas of communication. The thought here was that this conference would in no way replace or duplicate the national convention, which will continue to be held in conjunction with the SAA convention. There would be no attempt to cover a wide range of problems or areas, but there would be the possibility of going much more deeply into a few. The Council has completed the organization of the committee and it is hoped that the conference can be set up for the coming summer. Since the time is short, it may be necessary to postpone the first conference for a year, but the project is well under way.

A second new development is the plan to publish three issues of the *Journal* during the coming year. The new Editor, Francis Cartier, and the Consulting Editor, Tom Lewis, think this might be possible, though there are many difficulties which have yet to be solved. This is viewed as an extremely important development. The *Journal* is our most important agency for demonstrating our worth, reporting our findings, and providing the service we have set out to provide. In it is found material that is not available elsewhere, and this fact will become more pronounced as we grow and produce. More issues will simply compound our area for service and recognition. Important too, was the establishment of two new positions on the staff of the *Journal*. These are the position of Consulting Editor, which will be filled by each retiring Editor, and a Business Manager.

A projected reorganization within the study and research committees is being studied during the current year. A number of proposals have been made and are being studied by Wes Wiksell and the Council. During the year, some of these proposals will be tried and a uniform procedure may eventually be developed.

During the past year, Elwood Murray sent out more than 350 letters to college deans and almost an equal number to school administrators in all parts of the country explaining the nature and purposes of the N.S.S.C. and offering our services for the study of communication problems as these people saw them. As replies came back, the problems were sent on to the appropriate committees for study and reply if possible. This project did a great deal to make the Society known and to bring into focus a number of problems for committee study. One entire sectional meeting at the convention was devoted to a discussion of questions asked in the replies from deans and school administrators. A number of new members were also gained from these letters.

Several previously activated projects have been continued and expanded. These include the establishment of more regional chapters, expansion of study and research committee activity, investigation of the desireability of a joint National Council membership with the College Council on

Composition and Communication of the American Council of Teachers of English, expansion of the consultation teams already in existence, expansion of the Communication Information Service, continuation of the work begun by Elwood Murray in making our services known to college and school personnel and expansion of this activity to non-academic groups, and continuation and expansion of the organizing and sponsoring of communication programs in regional speech associations.

Two related problems still confront us. Our finances are not yet stable enough that we can breath easily from one issue of the *Journal* to the next. We are in the black and probably will continue to be so, but we are limited in many ways because our financial position is not strong. A business manager for the *Journal* should help, but we need to tap sources not yet available to us for some kind of financial backing. We are continuing to study possibilities in this area, but we need the help of every member. The matter of membership is closely related to the financial picture. Membership growth has been sound, but slow. Renewals have not been as complete as we would like them and sustaining memberships are far too few. Members who are really concerned with the future of N.S.S.C. should make every effort to change their regular memberships to a sustaining status. Likewise each member should redouble his efforts to bring others into the Society. Since members may be gained by sponsorship only, it is a responsibility of every member to help here. It is felt that some new membership classifications, for patrons, life members, groups, and students, will aid our membership drive. These new classifications, authorized at the convention, are now being studied and will be activated soon.

Nature and role of the Society. I suspect there were many of us who had a very limited view of the possible scope and potential of the Society. I was one of these. Many persons outside the Society, and some within it, still conceive of it as being just another group concerned with the study of the basic communication course in colleges. There are some who would be happy to relegate us to this limited role and prevent any attempt to go beyond it. Important as such a role is, the Society is not developing in any such way. We are opening avenues that lead to a study of communication problems so varied and so vast as to stagger the imagination. Perhaps we might have become more stable sooner if we had been more limited, but several factors are preventing this kind of limitation. Some of these factors should be examined.

Prior to the recent convention, when I was mailing out convention programs to N.S.S.C. members, I discovered that almost two thirds of our members were not members of the Speech Association of America or any of its affiliate organizations. Almost a fifth of the members are not connected in any way with a school, college, or university. They come from business, industry, government, the professions, civil life, the military, and the community and family. Those in academic life cut across all areas outside the speech field, with a surprising number of administrators. These facts put a complexion on our Society that forbids limitation to the academic aspects of

communication or to any other aspect. The nature of the membership suggests tremendous possibilities. The needs of our members are many and we will not be meeting those needs if we do not attempt to meet the challenge of the study of problems in communication whenever and wherever they present themselves and are within the scope of our resources.

It would have been much easier if we could have confined ourselves to very limited areas for study, but that is not going to be possible unless we revise our membership policies and our purposes. This is not to suggest that we should not limit where time, personnel, energy, and the interests of scientific thoroughness demand, but it probably does mean that at no time and in no place can we say that a problem dealing with communication is outside our province. While we are still relatively young, in both time and experience, we would do well, however, to avoid the pitfall of spreading ourselves too thinly, or attempting much and accomplishing little. The limitations probably should not be in terms of the area of the problem so much as in terms of the abilities of the study and research committees to deal with the problems. If a committee feels that it can attack a problem scientifically, study it thoroughly, complete the study and report the findings, I believe the study should be made regardless of where the problem falls.

There are several important areas that we know we are equipped to study, and others that we cannot much longer neglect. One of the former is in the area of communication in education. I do not refer to communication courses. I refer to communication within and among student bodies, faculties, and administrators. One of the University of Chicago's foremost thinkers recently suggested to me that we should have a committee studying these problems exclusively. He stated that he saw no more serious problem in education than that of ineffective communication among its personnel. A recent article published in the *Phi Kappa Deltan* (November, 1952) under my name, entitled "Communication in Education," brought a surprisingly enthusiastic response from a number of college administrators and faculty. One dean asked if I would attempt to study and suggest ways of improving communication in his faculty. It would appear that here is an area much in need of study and well within our scope.

Another tremendously important area is in the clinical aspects of communication. I cannot escape the feeling that a better understanding of "clinical disorders" of communication would be a great help in producing more effective communication at the "normal" level. More important is the use of the clinical techniques and methods in the study of "normal" as well as "abnormal" communication. Dr. Russell Meyer's article in the last *Journal* and his remarks at the convention indicate that here is a medical man that understands the tremendous importance of this area.

Finally, I feel impelled to mention an area that we have almost completely neglected as a subject for organized study. It concerns the use and misuse of communication in our current social institutions. The problem is suggested by one of our Committee Chairmen, Burton Byers, in a recent letter to me. He quotes Kohn's, *The Twentieth Century,* as follows:

"Characteristic of the mid-twentieth century is the progressive disintegration of language as an instrument of universally accepted rational concepts." Burton then goes on to say, "I am for an all-out campaign to awaken teachers of speech and English to the dangers of communism, fascism, and other dogmatic movements as they are expressed in language education. The late George Orwell maintained that by manipulating language skills and attitudes, you can enslave men's minds, souls and bodies. I think he was right, I think we have already moved too far in this direction, and *By God* I wish we could jolt our teachers of communication into a sharper awareness of the danger."

The urgency of the matter is felt by others also. The January 26, 1953 issue of *The New Republic* carries an account of how the music of Aaron Copland was banned from the recent Inaugural Concert of the National Symphony because a representative discovered that Mr. Copland had previously belonged to organizations that the legislator considered to be too leftish, principal among which was the organization, Artists for Roosevelt. Jed Harris, commenting on this episode, expressed the problem this way: "Everybody says this is a great new age—the great new media of communications. It is really the saddest thing in the world. Because what has been done is to give the greatest possible distribution to the most grotesque lies, or to the stupidity of conventionally held opinion."

There is no need to outline the problem further. We are all only too familiar with it. The important thing to me is that this Society is in a unique position to bring under scientific scrutiny some of the areas in which the misuse of language is so damaging to the social structure today. The witch-hunters, the demogogues, the subversives, both of the right and left, are able to create such mass hysteria and wreak such social disorder only because too many persons are ignorant of the nature of the language of distortion and confusion. Hearers do not know how to listen. Listeners do not know how to discriminate and evaluate. Schools and colleges have perhaps failed to teach better use of language among the populace. Is it any wonder that Burton cries for the awakening of the teachers of speech and English from their apathy? Here is an area in which we might truly function to some immediate good and for future betterment. It would take great imagination and courage, but who is to meet the challenge if we do not?

PROBLEMS IN THE MEASUREMENT OF DISCUSSION

An Introduction to The Symposium

John Keltner, University of Oklahoma

Discussion is growing up. There is a tremendous surge of interest in discussion method by adult educators, by industry, by service groups, by the government, by the armed forces, by the churches, and by most every other agency that is concerned with working through groups of people. This interest is not a passing affair. It has deep roots in a growing concern with the challenge to the whole democratic process. That challenge is being hurled at us from abroad and from within our own institutions. It is part of the concern with the myriad complexities of our social and political life. In response to this challenge we need to gather our forces and set to work to understand and develop our skill in these processes which are the very soul of our democratic system. This requires that we make more than armchair consideration of discussion. It requires that we become careful scientists and tireless experimenters with the problems we pose. It may require a new kind of discipline for many of us.

The past ten years have been fruitful ones for discussion research. More has been attempted in this period in the way of examining the processes that go to make up discussion than in any other period in research history. It is significant that the disciplines that have been concerned with this research are scattered through many academic and vocational areas. We have now on the records studies in the fields of psychology, social psychology, education, sociology, business administration, psychiatry, speech, and I hear that even biologists are concerned with some of the factors that have relation to people working in groups. All this is indeed encouraging but in fact we are still just composing the overture to the problem. Most of our efforts have served basically to help in formulating the questions that must be answered before we can understand just what this discussion phenomenon is and how it can be worked for good or evil.

Since we are still in the beginning stages it seemed quite important to bring together some of the problems that have been raised as sort of a short summary of where we stand. That was the purpose of this symposium.

The symposium itself was a part of a series of meetings designed by the Committee on Discussion and Group Methods of the Speech Association of America at the national convention of that association in December 1952. This committee (formerly called the National Discussion Foundation) has been active in recent years in planning convention programs, stimulating special research projects, carrying on surveys of the discussion field, and in conducting round table sessions at the national convention. These round table sessions have considered many phases of the discussion research and training program. The result has been most gratifying. More and more people are attending these annual meetings and are thinking seriously about the problems that are discussed there.

Probably no other type of oral communication behavior commands more time and energy in the practical world of affairs than discussion. It is in this context that much of the face-to-face communicative activity takes place. We must not rule out the family as a discussion group, nor children's groups, nor the informal "bull session" that eventually polarizes itself around some problem.

While many of us have thought of discussion as primarily a "public" affair in that it was a kind of thing that was "produced" for listeners in an audience or for the members of the discussion, it is becoming apparent that the most widely used aspect of discussion is in the informal committee meeting, table-talk, and the like. It is in these situations that all the implications of interpersonal behavior, of problems in communication, of group structure, and of group problem solving are realized. Our research must take these into account. Some of the papers reported here have done that to some degree. We hope that further research will work closer to these channels of study.

It should be obvious from the following papers that we realize more problems remain to be solved than have been resolved. I think that is good. It suggests a healthy attitude toward the field of discussion research. It suggests also that for the student of human relations there is still some great pioneer work to perform. We hope this symposium will help stimulate some of these pioneers.

In concentrating our attention on the problems in measuring discussion we do not intend to imply that these are the only problems in the scientific study of discussion. It should be apparent, however, that the problem of measurement is one of the first problems that we must resolve before we can move much farther in our work. Nor do we intend to imply that there is nothing to be done in the historical development of discussion or in the use of it in various situations with various purposes. These too are vital and important areas of research.

You will find in this series of papers several interesting points of view. You can detect, I'm sure, the influence of the fields of psychology, sociology, and other allied subjects. You will also see that there are differences of opinion as to the methods of approach and assumptions that should form the basis of the studies ahead of us. This too is good. We need these differences to stimulate closer examination of the problem.

But if you see nothing else I hope that you detect that the field of speech and communication is finally coming to grips with the problem of understanding discussion. It has been no quick conversion nor sudden spurt of interest. For many years we have contributed only too infrequently to the work. In the meantime other disciplines have surged ahead in developing assumptions and methods for study. It is interesting to see also that in doing so these disciplines have learned to rely more and more upon one another in collaborative research. We in speech are just beginning to learn the values of such integration. Our symposium reflects this growing understanding.

BASIC PRINCIPLES OF MEASUREMENT IN HUMAN RELATIONS AS THEY APPLY TO GROUP DISCUSSION

Milton Dickens, University of Southern California

There are several methods by which acceptable research is being done in the field of group discussion. One of these research methods is the **experimental,** which is characterized by controlled observations and quantitative measurements. In this paper a few basic principles of such measurements will be considered.

The first basic principle pertains to the attitude with which the experimenter approaches his task. It may be stated thus: *the basic goal of scientific measurement is not to "prove" but to "find."* Unfortunately, some of the studies reported in the field of group discussion have violated this principle—they have started with a conclusion and managed to prove it. This is an insidious error because it can be committed unwittingly and "honestly." Nevertheless, it permeates and invalidates everything else in the study.

Any experimental research should begin with what John Dewey has called "a problematic situation." Perhaps the most fundamental principle involved during this early stage of the inquiry may be paraphrased from F. S. C. Northrop's *Logic of the Sciences and the Humanities.* The principle may be stated as follows: *The problematic situation must be translated into a relevant factual situation suitable for quantitative treatment.* Let us apply this principle to group discussion. Most of the early research dealt with such discussion topics as, "How many beans are in this bottle?" This type of question provided data which could be readily quantified but the data were often unrealistic—people so seldom discuss the number of beans in a bottle. In real life people usually discuss questions of opinion or value, such as, "Should sex education be taught in high schools?" In such instances the "right" answer is probably unknown and the quantitative aspects of the question are not readily apparent. Thus, a challenge confronts our experimentalists—have we sufficient ingenuity to translate propositions of opinion into relevant factual situations where data can be quantified?

A following step in research is the construction of an experimental design. The basic guiding principle here should usually be the familiar law of the single variable. Some of the implications of this principle in human relations measurements may be clarified by re-reading J. S. Mill's "five canons," especially the second, and then analyzing a modern critique of the canons, such as that found in Cohen and Nagel's *Introduction to Logic and Scientific Method.* One way of stating the principle is this: *the experiment should be designed so as to change only one variable at a time, meanwhile rigorously holding all other variables constant.* It is usually difficult to satisfy this research requirement in our field since there are so many variables in even the simplest group discussion. A resulting dilemma is that to make our measurements valid, we must permit spontaneity in the discussion; yet to make them reliable, we must attempt to control the variables. One of the

common ways of resolving this dilemma is by having two or more groups of subjects, one of which is designated "the control group." Some of our researchers have overlooked this standard procedure. In fact, a review of the literature suggests that probably none of us has thoroughly whipped the problem of the single variable. Some experimental discussions have been allowed to proceed so realistically that one can only guess what variables were actually measured; other discussions have been "brought into the laboratory" and cluttered with so many "calipers and test tubes" that the controls have themselves become variables.

After the design has been settled, the next experimental procedure is actual observation and recording. Perhaps the most basic principle here is that of reliability which may be stated as follows: *The observation and recording should be sufficiently objective and accurate so that, if duplicated by independent critical observers, variations in the several sets of data would be those of chance alone.* In this matter the naivete of some of our experimenters has been shocking. Someone sits near the discussion group with a writing board on his knee and makes an "interaction diagram," or perhaps tabulates participants' remarks into such categories as "asks for clarification," "proposes compromise," "avoids the issue," etc. Such data are later presented as measurements of what went on. The enormity of such research crimes could readily be revealed (and prevented) by the simple device of having several observers simultaneously apply the technique.

When the data have been gathered, the next step is statistical manipulation. Many basic principles are involved at this stage. One concerns the meaning of the concept of "measurement." An omnibus statement may be attempted as follows. *Best measurements require a variable capable of quantitative differentiation along a continuum of equal units, each unit susceptible to infinite subdivision, and ranging from least to most, beginning from absolute zero.* Seldom, if ever, in discussion research can we hope to achieve all of these theoretical requirements for measurement. The thing is to know which requirements have been met and which have not been met. Then we can choose appropriate statistical tools and understand the limitations of our findings. In line with this principle, we should understand the differences. In line with this principle, we should understand the differences between counting and measuring; between describing and predicting; between categorical and variable data; between continuous and discontinuous series; between comparative positional differences and absolute differences; and between equal and unequal units of measurement. These problems are explored in detail by most of the standard statistical references, such as, J. G. Peatman's *Descriptive and Sampling Statistics,* and J. P. Guilford's *Fundamental Statistics in Psychology and Education.*

The final stage of experimental method is the interpretation of data and drawing of conclusions. Of the several basic principles involved, one that is too seldom stressed may be put as follows. *The interpretation of quantitative data is a function of two main factors: an understanding of the statistical formulas used, and an understanding of the character of the data.* In

discussion research, workers from the field of psychology have usually been strong in their knowledge of statistics but sometimes weak in first-hand experience with the rough and tumble of "real life" group discussions. Workers from the field of speech have often been just the reverse. Even when both factors are understood, there is always the danger of failing to distinguish between "conclusions," based upon the immediate data, and "implications" which go beyond those data. Likewise, there is the temptation to regard one's conclusions as finalities rather than as hypotheses—hypotheses which should reveal new problematic situations so that the endless spiral of experimental research can continue with renewed momentum.

Restrictions upon the length of this paper have provided a happy excuse for not attempting to consider *all* the basic principles of measurement. These six principles were chosen because in the past they have more often been honored by oversight than observance. However, we can all optimistically agree that, although our past may not have been unsoiled, our future is spotless.

* * *

PROBLEMS IN MEASURING DISCUSSION PROCESS

R. Victor Harnack, Northwestern University

Discussion researchers today find themselves frustrated by lack of reliable and practical means of describing the process of discussion either qualitatively or quantitatively. This paper will consider some of the problems that arise in the construction of a method of classifying segments of behavior, a task which is a necessary preliminary to quantitative description of discussion process.

The process to be measured consists of what the discussants *do*. Any discussion group has three major areas of *doing*. The first follows directly from the assumption that the discussion group is purposive. That is, the members have some adjustment to make, as a group, to an external situation. The group has a problem to solve, a report to make, principles to be examined, etc. This may be called the group's *task area*.

Second the members have to maintain themselves ase a group, organize their manpower, provide for some structure, etc. This second type of doing may be called the *group building and maintenance area*.

Finally, the members need personal satisfaction. Needs such as companionship, identification, recognition, etc., form the focus of this area of doing which might be called the *inter-personal area*.[1]

A method of measuring discussion process should, then, reveal the areas of doing (the foci of the behavior), but ideally it should go one step further and reveal something of the *manner* in which the discussants attempt to operate in the areas.

The most familiar process scheme is the problem-solution sequence. All acts may be viewed as being addressed to the solution of some problem

in the task area, the group building area, or the interpersonal area. Viewed in this way, a discussion consists of a series of small problems, and if it is a good discussion, a series of satisfactorily solved problems. Probably the simplest problem breakdown is the three phase analysis; the perception of a need or the expression of a tension unresolved, the attack upon the problem, and the decision-making and tension-releasing phase. This simpler breakdown would probably be more adequate for describing the smaller problems than a discussion as a whole.

Of more than passing interest to the discussion researcher is the appearance of member *roles* as the result of the discussion interaction. While it is possible to use some type of sociometric measurement to determine the relative status positions of the members, the members involved in a discussion are not always consciously aware of the influence of the various members. Furthermore, the experimenter may wish to structure one or more of the roles in a group and to check upon the manner in which the roles were being carried out. Therefore, a third requirement for a method of measuring discussion process would be that it include a system which would reveal differences in roles.

We have set up three major objectives for a method of measuring the discussion process. The question now remaining is: What are some of the problems to be solved in order to reach these objectives?

One of the major complications is that there are usually two levels of activity involved in a single performance. The first and more obvious level is the idea level at which the contributions are addressed to the recognized problems facing the group. The second level is the social-emotional level at which the members are sparring for position. Haiman makes the distinction as follows:

> . . . at every meeting of a group there is not only a regular agenda (items of business to be discussed in handling group tasks) but also a "hidden agenda," consisting of difficulties in personal relationships which must be worked out before the members are free to cooperate effectively with one another.[2]

As an example, a statement ostensibly aimed at giving information might also be an indirect attempt to deflate the ego of another member not possessing this information.

It is relatively easy to classify a contribution as information-giving, but how does the observer acquire the ability to perceive the hidden agenda? The hidden agenda poses less of a problem in relatively unsophisticated groups such as children's groups. However, the adult seldom makes a forthright statement such as: "I don't like you!" or "I want to be leader. You've been leader long enough!"

Some of the methods of measuring discussion process have assigned categories to expressions of positive and negative social-emotional reactions such as: shows tension, shows antagonism, relieves tension, shows solidarity, blocker, aggressor, etc. But it is unrealistic to ask the observer to decide

between a social-emotional category and one in a task area if both levels of interaction are present at the same time.

Obviously personal interactions should be identified. One method might be to rate each contribution on a positive-negative social-emotional scale in addition to classifying it on the idea level. For example, a scale ranging from plus three to minus three could be used as the framework. A given act might be scored as information-giving, but the observer, noting an apparent intent to deflate another's ego, could also give a minus social-emotional rating to the act. The results of this type of scoring could be expressed in terms of average levels of social-emotional activity for the entire discussion, for any given parts of it, or for individuals.

Another question made apparent by the preceding discussion is: What should be the basis of the observer's inferences? The act of categorizing behavior necessitates inference-making however much we desire a purely "objective" procedure. The problem is to find a basis for the observer's judgment which provides for reliable results.

There are at least three possible bases for making such a judgement. One might be to classify behavior as to the effect it had upon the group—"how the group saw it." Theoretically this approach has merit since the meaning of a statement is relevant only in terms of the perception of those to whom it was addressed. However, it forces the observer to wait to score until the members of the group have reacted in some fashion to the statement. Another method might be for the observer to assume the role of the "generalized other" and classify upon that basis. That is, the observer could try to react to the contribution as if he were a typical member of the group. A third method might be for the observer to classify upon the basis of what the discussant *intends* his statement to mean. Classifying upon basis of intent would probably be superior in the small group, but the "generalized other" would probably be the inevitable approach in a larger group.

Two problems can be grouped under the general heading of problems involved in revealing differences between groups.

The first of these questions is: How much and what kind of behavior should be classified in one unit? Steinzor recommends the verbal unit, defined as the verbal contribution of an individual lying between the contributions of others.[3] Bales perfers to use any observable behavior (verbal or otherwise) and the size of the unit becomes the smallest distinguishable segment of behavior.[4] The choice is difficult. The larger unit is easier to distinguish and the smaller unit permits greater specificity.

The second question is: How many and what kinds of categories are necessary? The possibilities for categories are almost limitless. Bales uses twelve, set up to reveal the problem-solution framework.[5] Steinzor sets up eighteen categories and further requests the observer to note whether the contribution was addressed to the task, the group, or the self[6] The writer, in collaboration with Hope Roach and Richard Wischmeier of the University of Oklahoma, constructed a form using fourteen categories.

Some of the possible categories are: information giving, opinion giving, information seeking, opinion seeking, procedural counseling, agreeing, disagreeing, tension creating, tension releasing, seeking support, giving support, withdrawing, blocking, reasoning, and orienting.

The experimenter must decide whether the observation should be made from a written transcript, a recording or "on-the-spot." Analyzing from a written transcript permits a more careful and exact scrutiny, but only of the verbal interaction taken from context. Much the same can be said for the analysis from a recording. On-the-spot analysis offers the observer the full context, but he must make snap judgments or find himself three or four contributions behind in a rapid exchange. A possible solution to this problem might be to have the observers watch the discussion and then give them the written transcript as soon as possible after the discussion.

In view of the complexities involved in measuring the discussion process, one might reasonably ask whether or not one instrument can accomplish the task. The answer would be that it is perfectly possible for the tasks to be assigned to different observers. For example, one observer might use a form designed to categorize all contributions addressed to the task or to the group building areas; another observer might rate such contribution on a scale of positive-negative social-emotional reactions and categorize those that were "purely" social-emotional in content; and still another observer could isolate the individual problems that were being attacked, identify them as to task, group, or interpersonal areas and note whether they seemed to be solved. This is only one of the many ways in which the tasks might be sub-divided.

One final caution. Some of the picture of the discussion process will be lost by simply adding up the isolated parts of the whole. Even with perfect observation, a method of categorizing will probably fall short of an accurate portrayal of the process. At best it can be only a help. There is probably no immediate substitute for trained observers recording impressions about the total picture to supplement the data gathered from quantitative analyses. Such matters as the nature of the group climate, degree of permissiveness, and the quality of group thinking are not readily revealed by quantitative analysis. We need more than a list of the individual acts to answer the question: *What happened during this discussion?*

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[2] Franklyn S. Haiman, *Group Leadership and Democratic Action.* (New York: Houghton Mifflin Company, 1951), p. 89.

[3] Bernard Steinzor, "The Development and Evaluation of a Measure of Social Interaction," *Human Relations*, 2 (1949) 103-120.

[4] Robert F. Bales, *Interaction Process Analysis* (Cambridge, Mass: Addison-Wesley Press, 1950).

[5] *Ibid.*

[6] Steinzor, *op.cit.*

PROBLEMS IN MEASURING PARTICIPATION IN DISCUSSION

Laura Crowell, University of Washington

Evaluation of a member's participation in a discussion can help significantly in awakening him to his own specific needs and in measuring his development. If *all members* of a group recognize with sufficient clarity that an individual member's attitudes and activities are *his reactions* to the group's attitude and activity, they will see any assessment of his participation as an evaluation of themselves also.

Five problems confront us in evaluating participation:

1. Finding the basic factors of participation;
2. Getting a complete listing of the basic factors;
3. Seeing that the factors are mutually exclusive;
4. Giving the factors appropriate weighting; and
5. Differentiating degrees of achievement.

Let us consider these problems in turn: first, that of searching out basic factors of participation. Research studies have shown that effective leadership is a function of the specific situation. The same is true of participation. For example, we would likely agree that even "tactfulness" is not equally essential in all situations. The situation makes its own demands, and the effective participant is he who senses these needs of the group and exerts himself in their fulfillment. Hence, a mere listing of desirable traits is not enough. The basic factors are those which strike through the specific relationships of any situation and assess the alertness of the individual to the needs of the group and his efforts to supply those needs. Too many lists of factors do not recognize the necessity of adaptation to the differing discussion situations.

The building of a list of basic factors will take time. Many of us are doubtless at work on the problem. This fall I posed the question of what factors constitute effective participation to 17 trained persons who work closely with discussion, as teachers of the method or as advisors of groups who work through discussion. Analysis of the resulting lists showed five concepts most frequently mentioned. Then, as another means of getting at factors of importance in participation, I drew 23 significant statements from the lists, retaining the original phraseology and trying to cover all the factors suggested. I asked 45 high school principals and instructors, 14 church and social workers, and 20 student leaders at the University of Washington to rate these items on their degree of importance. These ratings agreed essentially with the experts' lists as to the five most important factors, and, further, gave some indication of an understandable phrasing of them.

These are the five factors:

Genuine desire to reach the "best" solution;
Considerateness of others;
Weight of factual material presented;
Soundness of reasoning done; and
Cooperativeness.

We can say tentatively, on the basis of this preliminary investigation, that these concepts are important and meaningful. Further investigation must reveal whether they may truly be termed "basic."

The second problem is to get an all-inclusive listing of the factors. The list of factors must be complete if a total rating of an individual's effectiveness is to be made. In a classroom, however, the instructor may wish to focus on one concept at a time. Nevertheless, he will need to focus on each of the elements which make up effective participation at some time in the course if his students are to achieve maximum development.

Now, we all find it easy to list traits of mind and personality, activities and sensitivities which are parts of effective participation, but probably none of us would wish to defend his list as giving a complete picture of participation. Such a list, however, must be built.

The third problem is to assure that the concepts are mutually exclusive. A frequent weakness of lists made subjectively is the overlapping of factors. But overlapping allows fuzzy thinking, and gives a distorted composite picture of participation.

Sometimes the overlapping occurs because the listmaker uses several approaches within the same list. In the following series of factors, which the writer has occasionally used as the basis of a classroom rating scale, the first two items are definitely attitudes, the third and fourth are concerned with performance, and the fifth is an omnibus factor conditioning the others:

1. objectivity toward ideas (attitude);
2. sensitivity toward other members (attitude);
3. worth of information presented (performance);
4. worth of thinking done (performance);
5. acceptance of share of group responsibility (underlying the total act of participation).

It may be that the very nature of participation makes such a complex of elements necessary; perhaps we can only expect to minimize not eradicate, the overlapping.

The fourth problem is to give the factors appropriate weighting. Suppose that we have arrived at a listing of factors (basic factors) that are all-inclusive and mutually exclusive. A fourth problem lies in the realization that these factors may not all deserve equal weighting in the total picture. Although it is more than likely that the five concepts arrived at in the preliminary study previously referred to will be changed when tests for mutual exclusiveness and for all-inclusiveness have been completed, it may be of interest to report judgments made of their relative importance. Decisions by sixteen experts showed the first item (genuine desire to reach the "best" solution) as distinctly more important than the second (considerateness) or the third (weight of factual material presented). Only a list of factors whose relative weights have been experimentally determined can provide a fair basis for a composite evaluation of participation. Even if an instructor focuses on one trait at a time, he needs to know the relative importance of

the factors in order to apportion his time most effectively. Further, he will likely wish, toward the end of the training period, to turn from evaluation of individual factors to a composite picture of a student's participation.

The fifth problem arises in differentiating degrees of achievement. Achievement must be measured on a continuum of effectiveness. We are accustomed to breaking the continuum into parts to suit our fancy and casually labelling the division points or areas with such terms as "inferior," "fair," "good," etc. However, research in the Speech Communications Laboratory at the University of Washington has shown that such terms have widely different meanings for different evaluators, that "excellent" and "superior," for instance, cannot be validly used in the same scale. Even if we avoid these labels by using numbers, as in the 5-point or the 7-point scale, we often translate the results of the ratings into descriptive terms, thus falling into similar error. These are problems which can, however, be solved by experimentation.

In the use of this scale of effectiveness lies a greater difficulty—that of recognizing specific attitudes or behaviors of a member as evidence of his "fair," "good," or "excellent" performance on a particular factor. How can the evaluator accumulate evidence on all of the aspects of the factor so that he can render a valid judgment? Can he judge effectively with only a general understanding of these aspects, or should the testing instrument provide him with an inclusive, mutually exclusive, appropriately weighted listing of these aspects? Only experimentation can determine whether the factors themselves are concepts too large to be approached directly. The few attempts already made to use these factors as wholes seemed to indicate the necessity of searching out their components to make an efficient evaluation.

A further obstacle lies in asking an evaluator to make a number of judgments (each difficult in itself) on a number of participants. Often the problem is bypassed by asking him to rate only a few participants on all the factors, or to rate all the participants on only one factor. The latter method is frequently used in the classes at the Air University, as on the trait "power on the group." It is still easier for the evaluator to record the amount of participation by each member, or to indicate to whom remarks were directed and from whom received. These observations are of minimal value, however, for they give but small evidence as to significant achievement on any of the basic factors of participation. Judging any of the less tangible factors will doubtless always be more or less difficult for the evaluator.

We have seen that at least five problems face us in the evaluation of participation: finding basic factors to measure; getting all of them; eliminating the overlapping; giving the factors appropriate weighting; differentiating degrees of achievement (a problem difficult both in building the instruments and in using them afterward). It is clear, then, that the problems in evaluating participation are not going to be settled this month or this year. Some instructors say that they do not yet try to measure the work of members in discussion groups. Such an assertion expresses the current dissatisfaction with the measuring instruments we now possess, and suggests that develop-

ment of valid methods is much needed. We must move forward by rigorous experimentation to test the hypotheses that we have formed as we have been familiarizing ourselves with the nature of the discussion process. We must build an all-inclusive, mutually exclusive list of the basic factors in participation, find the relative importance of the factors, and cast them into a variety of useful instruments on which varying degrees of achievement can be effectively recorded. Until we solve these problems, our attempts to measure participation will remain fumbling and inconclusive.

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PROBLEMS IN MEASURING PROBLEM-SOLVING IN DISCUSSION

Jack Douglas, University of Oklahoma

Aristotle said that the function of rhetoric was to deal with things contingent in human affairs.[1] Professor Aly has recently stated that the primary purpose of speech is to deal with "problems of probability."[2] Certainly the central business of discussion is the group treatment of group problems, or verbal problem-solving. The first question for this paper, then, becomes that of the nature of "problem" and "problem-solving."

Problem-solving is here taken to mean that activity which follows from, and occurs in, a problem-situation. A problem-situation, in turn, is defined as that in which an organism, engaged in commerce with its environment, is motivated toward a goal denied to it by an obstacle, and searches among available alternatives until a choice is consummated which releases the original motivation. This definition has evolved from studies by Seashore, Chrisof, Keltner, and D. M. Johnson.[3] Such a definition, when made specific in a given problem-situation, becomes operational and saves us from the subjective structuring or ambiguous confusion that devolves from calling problem-solving "thinking" or "reasoning."

It is generally supposed that cognition plays the largest role in problem-solving, but the dynamic, or motivational, factors must not be omitted, as they often are in philosophical discussions of "thinking." In fact, motivation is inherent in cognition itself.

"It is the complexity and subtlety of the cognitive processes—perceiving, remembering, image-making, and thinking—which are the hallmark of human behavior," as Leo Postman has said.[4] It might be suggested, also, that problem-solving discussion is the hallmark of human social behavior. If such be the case, then what in the wide universe could be so important an object of measurement and study as human problem-solving?

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[1] Lane Cooper, *The Rhetoric of Aristotle*. (New York: D. Appleton-Century Co., 1932)p. 11.

[2] Bower Aly in an address to the annual convention of the Oklahoma Speech Association, Oklahoma City, Oklahoma, October, 1952.

[3] R. H. Seashore and B. Katz, "An Operational Definition and Classifications of Mental Mechanisms," *"Psychological Record*, 1 (1937) 3-5. C. Chrisof, "The Formulation and Elaboration of Thought-Problems," *American Journal of Psychology*, 52 (1939) 161-85. John W. Keltner, "An Experimental Study of the Nature and Training of Skill in Problem-Recognition and Formulation in Group Discussion," (Unpublished Ph. D. dissertation, Northwestern University, 1946). D. M. Johnson, "A Modern Account of Problem Solving," *Psychological Bulletin*, 12 (1944) 201-29.

[4] "Toward a General Theory of Cognition," in *Social Psychology at the Crossroads*, edited by John H. Rohrer and Muzafer Sherif. (New York: Harper and Brothers, 1951) p. 242.

It is pertinent, now, to consider what progress has been made, and, particularly what gaps are left unfilled, thus far in problem-solving research. The writer has recently reviewed the experimental literature in problem-solving and has drawn the following conclusions, among others:[5]

(1) Research in problem-solving has been largely confined to problems with "answers in the back of the book"—especially those of the puzzle and sorting varieties. The validity of conclusions from such studies for problems of probability is in extreme doubt. The great majority of these studies have been done in psychology. Since 1940, in the field of speech, a few studies have been reported which used the complex social problems with which our public talking is usually concerned.

Seldom does an investigator show any awareness of the existence of different types of problems, or limit his conclusions to the types of problem, usually unreal, which he has used. This reveals the necessity for research which will permit a more adequate classification of problems, or, rather, problem-situations. The division of problems into fact, value, and policy appears valid and useful (except that I should add: definition), but more detailed classifying is essential.

It might be said that no competent study has been done using *real social problem-situations* although Chrisof makes the claim.[6] Our discussion groups may deal with real *problems*, all right, but the *situations* are artificially contrived. Often the problem is not real for the participant—his motives and goals are not inherent in the problem.

Now, it is apparent that this criticism applies to the great majority of research in all human behavior, and bringing together actual problem-situations with adequate experimental design presents tremendous practical difficulties, but until we study something beside the "hot-house" variety, we are hardly justified in drawing any but the most tentative conclusions about problem-solving.

(2) The influence of cultural values in problem-solving has been largely ignored. Solutions which may be unanimous among a group in one culture may be unthinkable for those in another culture. These values usually operate unconsciously, are seldom stated as criteria within the deliberation but taken for granted, yet often appear to shape the chosen solution more than any *stated* criterion.

(3) The perceptual process is the basic function in problem-solving as it is in learning and possibly in all behavior. We will learn more about how people solve problems when we learn more about how they *perceive* the problem-situation. There have been scores of studies of the role of sets and insight, but little about the influence of various factors on perception and the influence of perception on discussion outcomes.

(4) The concentration of studies on critical thinking is striking. We know more about the reasoning and judgmental functions, perhaps than any

[5] Jack Douglas "An Experimental Study of Training in Problem-Solving Methods," (Unpublished Ph.D. dissertation, Northwestern University, 1951), pp. 130-255.
[6] *Loc. cit.*

other aspect. This condition is consistent with the common but specious notion that reasoning and problem-solving are identical. The available paper tests of thinking, including Noll's,[7] Zyve's,[8] the Watson-Glaser,[9] and Alma Johnson's[10] depend on the subject's selection of *given alternatives.* This seems to be a necessary limitation for purposes of mechanical scoring. The result, however, is that little is known of the subject's total problem-solving skill since we have no measure of his ability to *create* solutions. Kearney has made a useful start in measuring creativity by simply counting the number of different solutions proposed in a discussion.[11] What is needed now are techniques of measuring degrees of novelty, relevance, and validity of hypotheses and solutions. These are extremely difficult to contrive, which probably accounts for the tremendous lag in the study of the creative function.

(5) Perhaps we have approached the analysis of problem-solving discussion with too many pre-conceived notions about structure or discussion pattern, often finding what we are looking for. Study of real life discussions caught in the act might correct some of our pat notions of inherent structure. One thing is certain: patterns of problem-solving will vary with the type of problem-situation.

(6) Another area of basic significance which has been widely ignored is that of concepts and semantics in problem-solving and discussion. The psychologists have ignored the problem, preferring to concentrate on simpler processes in which the tremendous variable of language does not enter to complicate the picture. Heidbreder has done the greatest work on concepts, in a long series of experiments dealing with number, size, and space, but she has not yet gotten to the simple and common abstractions of everyday language.[12] No studies have been designed, apparently, to isolate various meanings and shifts in meanings of central concepts in a discussion and to relate these to progress in the deliberation, although Irving Lee has suggested some possibilities.[13] Ignoring the variable of word-concepts in research in speech and group discussion is hardly comprehensible.

(7) There are a few studies of the relation of problem-solving to a number of other abilities and characteristics, particularly age, sex, intelligence, temperament, mental disorders, physiological functions, and academic achievement. More such studies are in order.

(8) Much more can be done to apply the findings from the psychology of perception, learning, and psychodynamics in guiding our research in problem-solving. There is an especially wide gap between research in clinical psychology and problem-solving although it might logically be expected

[7] V. H. Noll, "Measuring the Scientific Attitude," *Journal of Abnormal and Social Psychology,* 25 (1935) 145-54.
[8] D. L. Zyve, "A Test of Scientific Aptitude," *Journal of Educational Psychology,* 18 (1927) 525-46.
[9] *The Watson-Glaser Tests of Critical Thinking.* (New York: World Book Co., 1942).
[10] Alma Johnson, "An Experimental Study in the Analysis and Measurement of Reflective Thinking," *Speech Monographs,* 10 (1943) 83-96.
[11] Mary G. Kearney, "A Method by Which the Degree of Effectiveness of a Problem-Solving Group Discussion May Be Described and Measured in Terms of Agreement-Disagreement (Unpublished M.A. thesis, Syracuse University, 1941).
[12] E. Heidbreder, "Toward a Dynamic Psychology of Cognition," *Psychological Review,* 52 (1945) 1-22.
[13] *How To Talk With People.* (New York: Harper and Brothers, 1952).

that findings in the two fields should be somewhat similar and mutually applicable. This parallel *has* occurred to some extent in the case of group therapy.

(9) There appear to be fewer than half-a-dozen studies, properly controlled, which measure the effects of various techniques of training in problem-solving discussion.

(10) A like number of studies have been devoted to development of measuring instruments. Perhaps the most notable of these is Alma Johnson's test of reflective thinking which attempts to measure major components of the entire process from formulation to reporting a solution.[14] Recent validation of the test by item analysis has apparently improved it sufficiently to make it a valuable research instrument for certain purposes.[15]

At this point let me list some suggestions for future research. May I suggest, first, that we need to concentrate on basic rather than applied research, to be content with fewer pronouncements of what *should be* until we have learned more about what *is*. This entails finding, or provoking, actual problem-situations for investigation. We need to get recording microphones under the tables of committees, commissions, councils, and conventions where people are discussing problems real to them, and on which they must make decisions.

These discussions may then undergo several kinds of analysis by various types of trained observers: observers trained in the subject matter of the discussion problem, observers trained in problem-solving methods, others trained in group and individual psychodynamics, and some just intelligent and alert listeners. The investigator should not be concerned at first with quantifying the observations or confining them to rigidly prescribed categories, saving these instead for later stages of the study. We need first good *qualitative* observation from competent observers left comparatively uninstructed, in order to note the *kinds* of things that happen.

From these observations we can isolate significant factors to be observed and define them operationally. Through this procedure we will be able to get at the basic functions and processes of problem-solving discussion—perceptual, creative, symbolic, dynamic, and critical, or judgmental). These five divisions provide a means of ordering research problems and data.

After extensive qualitative observation, we will be able to set up *valid categories* and *classifications* operationally discovered and defined. With these categories we may proceed to count, compare, rate, and compute with *quantitative* measurements whose reliability can be checked. At this stage, also, we will have acquired from the qualitative observations a number of significant hypotheses for which experiments can then be designed.

Perhaps it needs to be emphasized here that the investigator's success in designing crucial experiments will depend on his understanding of the *logic* and *rationale* of the various statistical procedures available to him.

[14] *Loc. cit.*
[15] Douglas, *op. cit.*, pp. 65-72.

If the steps just outlined appear to require a large number of trained observers, and to be otherwise tedious and difficult as well, one final suggestion may be made. Most of our problems in the measurement of discussion might be eased by a cooperative plan voluntarily established among a number of universities and colleges. Each member institution in such a plan might be expected to secure a number of recorded discussions on standardized equipment of groups engaged in actual problem-situations. These recordings might then be mailed about to participating institutions for analysis, each school, perhaps, providing a distinct kind of analysis according to its personnel. These institutions would thus share with each other their facilities for collecting recorded discussions and providing trained observation.

Such an activity should be supervised through a national committee, which might become the clearing house for the approval and organization of research projects requiring participation by several schools. Each member institution which voluntarily agreed to cooperate in the plan would be able to initiate research projects for the committee's approval. Such a plan seems to be a way to bring to heel the unusual and difficult problems of research and measurement in discussion.

The attention which we are now beginning to pay to measurement is overdue. We have heretofore depended on adjacent fields to do much of our research for us. We have been content to spin armchair deductions from the *a priori* assumptions of our dead rhetorical fathers. We have been guilty at times of using statistical formulas, whose logic we did not understand, to apply to experimental designs whose limitations were not adequately recognized in the conclusions drawn.

Development in discussion, and indeed, in the field of speech generally, depends upon our ability to demonstrate clearly in experimental research the essential nature of that which we study and teach. This experimental development waits, as Dickens and Heffernan have said, on "developing and validating new experimental techniques and procedures," and on "the invention of appropriate measuring instruments."[16] Effective research waits, also, on operational definitions and the phrasing of crucial questions which permit clear answers.

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LEADERSHIP EVALUATION: SOME PREMISES AND PROCEDURES

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It appears from the titles of the papers in this symposium that there are *problems* in measuring the discussion process, *problems* in measuring participation, and *problems* in measuring the results of discussion—but only *premises* and *procedures* when it comes to measuring leadership. The title of this paper was not intended, however, to imply that there are no problems

[16] Milton Dickens and Marguerite Heffernan, "Experimental Research in Group Discussion," *Quarterly Journal of Speech*, 35 (1949) 28.

in evaluating group leadership: rather it was chosen to isolate and emphasize two of the most critical problems in scientific measurement. If it appears that an excessive proportion of this paper is devoted to a consideration of the *premises* underlying the evaluation of leadership, it is because so many studies of leadership have gone astray precisely at this point.

Measurement, we are told, requires reliable measuring devices. Probably no lesson has been learned more thoroughly by successive generations of experimental-minded students. Through teacher and textbook we have come to realize that nothing in the design, conduct, and reporting of experimental work is quite as important as the figures which attest to the statistical reliability of the quantitative methods we have employed.

But this alone is not enough. Accurate evaluation of any social phenomenon requires that the procedure be based on valid assumptions about what you are measuring as well as accurate techniques for determining its dimensions. It is this failure to give sufficient attention to experimental assumptions, more than any other single factor, which explains the meagre results produced by a half century of experimentation in group leadership. Literally hundreds of studies can be found on the books in which the statistical procedure has been beyond reproach but where the results are unusable because the assumptions made by the investigator have proved to be partially or totally invalid.

This point is of such importance that it deserves further illustration and explanation. Those familiar with the scientific literature on leadership are aware of the large number of studies devoted to describing the personal traits of group leaders. By and large these studies have been conducted by qualified investigators who have used sound and respected methods of measurement. Like all carefully conducted studies they have produced some theoretical "leads" and some experimental techniques, but they have not fulfilled the chief purpose for which they were intended, i.e., to help us understand the nature of leadership or to provide an ultimate basis for more effective leadership training. Critics such as Stogdill, Eichler, Bird, Newstetter and others are fairly agreed that the findings show surprisingly little overlapping and considerable contradiction, leading to the suggestion that the assumption of a connection between leadership and personality is questionable—at least in the way and to the degree that these men assumed them to be related. Fifty years seems like a long time to spend with the wrong assumption!

Another illustration of the critical importance of experimental suppositions is provided by those investigations which were based on an analysis of the behavior of elected officials. On the surface it seems logical that if you want to know something about leadership you turn to those persons who hold positions of leadership—appointed officials, elected student leaders, committee chairmen, and the like. But not until Cowley completed his investigation of student leaders some twenty years ago did any of these experimenters recognize that their efforts were based on a false assumption. Holding official position was not found to have a necessary connection with exercising leadership in a group. Here, again, the chief result of these

projects was to disprove an assumed relationship and although that is of great significance in itself more careful consideration of this supposition might have prevented a great deal of wasted effort.

This same danger is with us today. There are a number of sociometric studies, for example, that have been carried out in the last decade which claim in their titles to be studies of leadership but which should be viewed with some skepticism. The studies I refer to are those measurements of leadership patterns in community and school groups in which the "tele" relationships—the likes and dislikes of group members—have been based on the criteria of rooming together, eating together, popularity, and so forth. It seems questionable whether or not leadership, popularity, and companionship are identical relationships. To my knowledge this has never been established and there are sufficient grounds for questioning its validity.

My purpose in giving these illustrations has not been to belittle the efforts of the last fifty years, but rather to point out that the major result of this experimentation has been to correct false assumptions rather than to find out much that is definitive or constructive about leadership. This could have been accomplished equally well with far fewer experiments if the directors of these studies had been more critical of assumed relationships at the outset of their experiments and if upon completing their work they had carefully re-examined the assumptions on which their procedure was based.

The first problem we encounter, then, in evaluating any type of group leadership is to formulate a set of experimental premises on which to base our measurements. The statements which follow are suggested for consideration by those contemplating studies in leadership. Some are supported by experimental data, but it would be wise to regard them all with a suspicious eye since statements of this type have a way of tripping up the uncritical research worker.

(1) Leadership—the successful attempt to influence and coordinate the activities of a group—must be distinguished from the person or persons who supply it. "Leadership" and "leader" are not synonymous terms nor do they refer to synonymous phenomena. Those of us in speech, particularly, need to overcome our tendency to talk and think about *a leader* rather than about the unique behavior which characterizes leadership.

(2) Nominal leaders—elected or appointed officials—must not be confused with the persons who really provide the group with leadership. The official roster of an organization *may* include the actual leaders but to assume this connection is likely to bias observations of leadership.

(3) Leadership must be studied and evaluated situationally. Representatives of all theoretical approaches to leadership study—traits, situationists, and functionalists—share the conviction that any description of leadership must be made in reference to a specfiic group, with a specific purpose, working under specific conditions.

(4) Leadership is a unique relationship existing between the members of a group. This being so, any evaluation must be made in terms of

the effect of leadership on the other *group members,* rather than in terms of its effect on the observer alone. Too often leadership has been judged on the observer's terms rather than on the group's terms. Like the cultural anthropologist, the student of leadership must be both a part *of* and apart *from* the group he is studying.

With these assumptions in mind we can now turn to the procedures one might use in investigations of group leadership. The range of possibilities is so extensive, however, that some selection must be made from among the battery of techniques which are now available. Rather than attempt such a cataloging, I would prefer to explain briefly three or four methods of collecting data which have shown considerable promise or which have not been fully exploited by experimenters. By and large these methods differ in the kind of data they will yield and the level of psychological activity being investigated.

The first of these might best be called the *descriptive-analytical* method. It involves keeping an accurate descriptive record or verbatim account of the emergence, character, and shifting of leadership responsibilities which is then used as a basis for analysis and interpretation. It is such an obvious method that many research workers disdain to use it, feeling perhaps that they will be on dangerous ground without their tests of reliability or their measures of significance. But it should be applied much more widely than it is for it seems likely to provide us with exactly the kind of information we need—more and better hypotheses about the sources and nature of leadership. Many, if not most, of our current theories regarding leadership have come from studies of this type conducted and reported by men like Thrasher, Lewin, Whyte, and Homans.

A second broad category of techniques would include the more typical *quantitative methods.* These devices, ranging from the categorizing of interactions through the numerous rating devices to attitude measurements are widely known and widely used. Some of them operate indirectly through an observer outside the group while others measure directly the reactions of participants to events occurring within the group. Little remains to be added to what has already been written about such quantitative methods except to warn that while they sometimes yield excellent coefficients, they are extremely difficult to adapt and apply to something as complex and nebulous as leadership.

The final type of experimental technique that I would like to mention, and one that strikes at the deepest psychological level, is that of the *projective technique.* Some of you who are familiar with the Thematic Apperception Test, or the TAT, may be interested to know that it has been adapted for group work and may prove very useful in making deeper analyses of the motives behind and effects of various styles of leadership. In combination with direct observation, rating scales, and attitude tests, it may enable experimenters to study leadership on all important levels of psychological inquiry.

In concluding my remarks, I want to stress that leadership is not an

easy subject to study. It includes so many variables, takes so many different forms, and occurs under such varying circumstances that it discourages many social scientists. Since it is there, since it is of such tremendous importance, we must continue to study it. But it should be approached with great care, both in the assumptions we make concerning it and in the choice and application of techniques by which we investigate it.

• • •

PROBLEMS IN MEASURING THE RESULTS OF DISCUSSION

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During the preparation of this paper, I submitted certain tentative suggestions to some of my colleagues. From one esteemed member of our association, a person I hold in high regard for his scholarly interests and abilities, I received this reply (paraphrased somewhat):

> The title of your paper deserves to be begged. Entities only are available for genuine measurement; the entities involved in discussion are the individual participants. 'Group,' just as 'society' and 'public,' is but a conceptual term for an abstraction. To measure *public opinion*, one can only avail himself of suitable yardsticks for individuals; similarly, to measure the results of *group discussion*, one can only measure changes in individuals.

I now submit to you that the very lack of appreciation revealed by this statement for what actually happens when people get together and discuss, and for the immediate and long-range results therefrom, illustrates the tremendous importance of our trying to think systematically about *problems in measuring the results of discussion.* With complete confidence that the overwhelming majority of you will agree with me, I can make such sweeping statements as: The whole is by no means the exact sum of its parts. Interaction in discussion at times leads to the discovery of facts, previously unknown to any single member. Discussion can and has increased knowledge of participants, stimulated desires for further study, helped correlate new knowledge with past learning, and served as the vehicle to coordinate and solidify opinion where there were varying attitudes and desires. Group discussion frequently encourages critical self-analysis and changes in behavior of participants. Discussion promotes open-mindedness and tolerance; it develops logical thinking; it stimulates feelings of public responsibility. We can say we know and accept these matters. What, however, are the difficulties we may face in attempting to prove or disprove them?

What, exactly, are the problems of measuring the results of discussion?

(1) Measuring the results of discussion should cover a long range of time. This poses problems of particular difficulty with questions of policy or of value. Many other factors will inevitably be at work in addition to the discussion activity. To measure with certainty the exact contribution of a specific discussion after the passing of time seems impossible in many instances.

(2) The contribution of the discussion activity to group unanimity on

matters of policy or value is more difficult to measure than whether or not the group (a) acquires certain "facts" or (b) tends to accept certain "facts." Yet discussion most frequently concerns itself with matters of policy or of value.

(3) The question itself is confusing. The obvious assumption is that something must happen because a group discussed. But many group discussions occur where those sponsoring the activity do not expect any measurable results, at least not in the normal sense of measurement. (For example, the Campus Y may hold discussions on the relationships of moral and practical law or upon ethical relativism.)

(4) An acceptance of discussion as an end in itself tends to obviate the necessity or desirability of looking for results beyond the particular discussion. (Typical reactions: "We should do more of this; gotta know what the rest of the world is thinking." "This sure cleared up some questions for me; it was a good discussion.") In other words, because we so frequently assume that increased knowledge, stimulated interest, and group consensus typically come about in discussion—we do not concern ourselves with efforts to measure the exact result.

(5) Discussion is typically resorted to when vested interests are not pushing for some specific decision. If no vested interest or no organization is vitally concerned, there is little impetus for determining the outcome.

(6) The common assumption of a cause and effect relationship between a discussion and developments which follow is a problem. The assumption keeps us from seeing the necessity of measuring accurately the results of the discussion, isolated from other possible causes.

(7) The inadequacy of measuring-instruments and the complications in using instruments with confidence that they are giving trustworthy data are significant problems. In 1940, Karl Robinson wrote,

> Despite the work of Thurstone and others in the measurement of attitude, there still remains . . . the question of the actual reliability of *any* attitude scale. Inasmuch as all such scales depend upon the verbal expression of an attitude (opinion), there is always the possibility that such an expression may vary or differ from the attitude actually held by the person who marks the statements on the scale.[1]

That statement is just as true today, of course.

(8) The many variables operating simultaneously in a discussion situation poses problems.

> Any one of these variables can easily be influential in causing attitude changes in certain persons and not in others. Individual temperament, for example, is a factor which could operate between two particular persons to cause or to prevent a change of attitude. It is also quite possible that such variables as sex or age could be very significant in determining a change of attitude, particularly if they make the person socially conspicuous. Certain variables created by the group situation and by the mutual stimulation occurring within it are also significant. The information gained during the discussion is such a one. When we realize that all of these may be functioning at the same time, the complexity of the problem is apparent.[2]

To admit that there are problems in measuring the results of discussion, even to attempt to state certain of these problems, would seem a rather sterile contribution, however, without some indication of solutions to those problems. Let us recall briefly some of the more praiseworthy contributions of our colleagues and postulate some areas which would seem to be encouraging.

In measuring the results of a discussion, we may be interested in any one or any combination of the following:

(1) *What action (and the amount) is undertaken as a result of the discussion?* Such obvious results as a plan of action, a list of policies, a decision to do or not to do—all these are important. Future researchers have many opportunities to contribute to knowledge of the role of discussion in our society by observing and reporting upon the frequency and the circumstances under which discussions do lead to overt action.

(2) *Have individuals moved (and how much) from their individual convictions to a common consensus in beliefs, or in what ways and to what extent have they changed their initial beliefs or attitudes?* The circumstances will permit, in some instances, reliance only upon the subjective judgments or estimates of certain individuals qualified to report. For example, the wartime orientation programs of the Army and Navy

> were designed to provide strong, conscious motivations for men who needed to understand 'why we fight,' to get a sense of purpose in being in uniform . . . . This large-scale attempt to train citizen soldiers and sailors psychologically as well as physically paid off in higher morale wherever it was permitted to function effectively. It exposed millions of men to the experience of talking over their common problems in organized groups and was instrumental in developing their attitudes and opinions on current affairs.[3]

We are happy to read such statements from competent, objective observers. We note with satisfaction, however, that there have also been some reports based upon carefully controlled statistical data.

Karl Robinson's doctoral study at Northwestern University[4] sought

> to determine the effects of discussion upon the *attitudes* of college students towards social problems. . . . Attitude changes were measured by the use of the Thurstone Attitude Scales which were administered immediately before and after discussion. . . . Twenty groups, heterogeneous as to sex, took part in the discussions. Control subjects did not discuss, but were given successively the two forms of the Thurstone scales on each problem.

This experimenting, with certain other controls and procedures, led to such conclusions as: "Experimental subjects made shifts of attitude amounting to statistical significance on both War and Capital Punishment problems; all discussion groups also showed significant changes of attitude."[5]

From a study at the National Training Laboratory in Group Development held at Bethel, Maine in 1949, came an attempt to answer

> what a group training experience has meant to a teacher in terms of changes in her personal goals and levels of aspiration, or changes in her motivation. . . . [The investigator reported that as a result of the discussions participants felt] more accepting of others, more respect for others, more tolerant of interpersonal difficulties, more sensitive to the feelings of others, . . . more accepted by others,

> more secure, less fearful, more spontaneous, less defensive of self, less withdrawn, and more confident. . . .[6]

Kurt Lewin's study at Iowa University during the early days of World War II is now widely quoted. He found group decisions through discussion much more effective in changing food habits (the substitution of whole wheat for white bread) than lecture appeals by outsiders.[7]

The use of recent attitude tests which have evolved from attempts to measure beliefs and opinions gives promise of additional contributions. For example, let us hope that we shall have some objective measurement of the effects of group discussions on beliefs, opinions, and attitudes through the use of measurement devices such as the Thrustone Attitude Scales or the scales based on the Likert method of scale construction—for example, the Minnesota Scale for the Survey of Opinions or the Scale of Beliefs of the Progressive Education Association. These latter scales use the self-report technique, asking individuals to describe their attitudes about certain personal, interpersonal, political and economic behaviors and beliefs. A more indirect measure of attitude change is attempted by such scales as the Vineland Social Maturity Scale in which certain behaviours are rated.* The interpretation of the Vineland scale assumes that these behaviour ratings are influenced by attitude changes. Similar indirect measures of attitude change, although less objective, have been made by direct observation of behavior of individuals or groups in normal or planned situations. The use of trained observers, and the use of phonographs and films to record the observations, has helped to make this method more objective.

(3) *Was the group consensus a "good" one?* Much as we might prefer, we cannot escape the necessity of measuring in some instances whether or not the composite judgment of a particular group was a desirable result. There is some good evidence to give heart to those who would like to work specifically in this area.

> Almost 1200 college students participated in an experiment in which they first recorded their individual votes on a variety of problems and then discussed the problems in small groups, working toward a unanimous group verdict. Problems were used for which some determination of the right answer was possible [determining the better of two pictures, determining the better of two poems, determining which of two newspaper headlines has greater social significance, determining which of two fears is more prevalent in college women, etc.]. The rightness of individual and group decisions was studied. . . . The accumulated evidence shows conclusively the existence of a tendency for discussion to produce a shift toward the right, rather than the wrong answer, even when majority influence is allowed for.[8]

A carefully set up and controlled experimental study by William Timmons, at Teachers College, Columbia, set out to answer two questions: "Does discussion result in better choices of solutions? And does it result in a revision of attitudes toward the problem? It was found that the students who read and discussed were better able to arrive at good solutions than those who read and restudied."[9] J. F. Dashiell's review of a wide range of

* Any of the three specific tests mentioned here can be obtained from the Educational Test Bureau at 720 Washington Ave., S.E., Minneapolis 14, Minn.

experiments showed "the effect of group discussion on the individual's work." Judging time intervals between taps, estimating the number of beans in a glass bottle, building words from supplied letters, and several other approaches indicated increased "rightness" for members of a group beyond the mean of their individual efforts when working separately.[10]

The existence of considerable experimental evidence seeming to prove the ascendancy of the "right" in discussion may not be of help to the scholar concerned with whether or not a particular group consensus was a "good" one. The research in the field, however, does provide important data and suggests methods which can be of help in future studies.

(4) *Did individual members of the group acquire information through the discussion activity?* Much evidence providing affirmative answers in specific situations has accumulated. Several interesting studies have compared the results of the *lecture* and the *discussion* methods of teaching. Discussion has seemed to come off much the better through these studies (although this generalization demands careful interpretation and limitations). For our purposes, however, it is important to appreciate that discussion procedures can be highly effective in bringing about learning. Paul Rickard's doctoral study at Northwestern "dealt with the effectiveness of group discussion as a method of teaching factual content . . . . A loss of factual content did not result from the use of the discussion method in the teaching situation. To the contrary, a material and statistically significant gain in factual content knowledge was noted."[11] The recently founded Center for the Study of Liberal Education for Adults offers this judgment: "Discussion seems to be preferable to lecture teaching for adults."[12]

(5) *Is there evidence that the product of the discussion is something different from what would result from a compilation of individual reactions? Is or is not the total the exact sum of its parts?* Kurt Lewin's early studies showing the tremendous differences in output of similar groups operating under autocratic, democratic, or laissez-faire leadership brings home to us the fact that individual members may react much differently depending upon the climate of the group. Most of us are confident of our empirical judgment that a minority of fluent, persuasive (but not dogmatic) discussants can win over a majority to their convictions. In some instances, the majority may seem to support a view and allow the report to be made public as representing group opinion, although an analysis and averaging of individual judgments or opinions would provide a different consensus. Thorndike reported well-supported evidence that those who are "right" in their judgments sway more people than those who are "wrong," although the strength of conviction may be the same.[13]

We will certainly welcome additional evidence as it demonstrates whether or not the individual in a group becomes something different from himself in isolation and whether particular groups are or are not simply the sum total of the beliefs, attitudes, and knowledges of individual participants.

No pretense can be made that we have thoroughly covered all the issues involved in measuring the results of discussion. Obviously, if the percepts

by which we evaluate the discussion process, leadership, and participation have any validity, there will be much overlapping in their measurement and the measurement of the results of a specific discussion. Observation forms for evaluating or for "feedback" after a discussion include items directly concerned with results.[14]

The purpose of this paper has been simply to open up problems in measuring the results of discussion. I have listed eight such problems which seem to me of particular importance. To overcome these eight hurdles and the others which might well have been included, I suggest five different questions, the answers to which should be of significant help. Admittedly, obtaining the answers to these questions may be of considerable difficulty, but there is ample evidence that answers can be obtained and that pioneering research has opened many doors for successful and significant measurement of the results of discussion.

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A LIVING COURSE IN COMMUNICATION AT A DYING COLLEGE

Jerome G. Kovalcik

Champlain College, a four-year liberal arts unit of the State University of New York, set out in 1950, the year of its dedication by the State of New York, on a vital and modern educational program especially geared to the needs of today's college students. Included in the new Champlain College plan of general education is a required freshman course called *Forms of Communication.* Ordinarily one would wait a longer period of time before publicizing a new development in the curriculum. However, since the U.S. Air Force has been authorized to recapture the site of Champlain College and since no attempts are being made to relocate the institution as an entity, an account of the course had better be given while the college is still alive.

The *Forms of Communication* course, extending over two semesters for four hours a week, has the primary purpose of helping the student secure the foundation for the liberal education which is the aim of his whole college program. To that end it directs his attention to, and provides him with experience in, the fine arts, particularly language, literature, painting, and music. From this experience the student is expected to grow in awareness and appreciation of the ways in which man gives expression to and communicates his ideas and emotions. At the same time he is encouraged and guided in developing his own ability in communicating, i.e., in developing understanding and skill in seeing, reading, listening, speaking, and writing.

The course is organized around the *Forms of Communication Syllabus,* prepared jointly by Richard Lalor, John Hogan, and Jerome Kovalcik of the course staff. In planning the course, the staff was aware that the sophomore required course in the Area of Arts, Letters and Philosophy, *Literature and Human Values,* makes provision for further practice in language skills.

The core of the first semester's work is the series of lectures given in the theater each week before the entire freshman class. These general lectures draw upon the resources of the arts, language, literature, and philosophy to illustrate man's modes of expressing and communicating his ideas and emotions, and to suggest problems and provide experiences in communication. Fourteen lectures fall into three divisions; the first four concerned with the skills of linguistic communication, the second five with the nature of language and thought, and the last five with art as communication. The titles of the lectures are as follows:

1. The Role of the Listener
2. How To Improve Reading Ability
3. Written Communication
4. Oral Communication

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5. Development of English
6. Problems of Usage
7. Problems of Meaning
8. Patterns of Thought
9. Obstacles to Good Thinking
10. The Forms of Art
11. Narrative and Idea Painting
12. Formal Values of Painting
13. Vocal Music
14. Instrumental Music

Three group meetings within the week give the students the opportunity to extend their acquaintance with the subjects and materials of the lectures. Between fifteen and twenty students meet in classrooms equipped with visual and auditory aids, including projector, phonograph, and tape recorder. The procedures of the group meetings vary. The subjects of the various lectures present opportunities for different procedures, and, although the skills of communication are obviously interrelated, in group meetings particular attention is focused on one or another of these skills.

An illustration of the procedures during a particular week will clarify the attempt to integrate content with the lecture and to develop the individual skills of communication. During the week when the lecture *Patterns of Thought* is given, one group meeting consists of a brief written test of the reading comprehension of James Harvey Robinson's essay "Four Kinds of Thinking" and a discussion aimed at pointing out principles for the improvement of the reading skill. The second meeting includes a round-table problem-solving discussion of a campus question. The organization of this discussion emerges from the study of John Dewey's description of individual thinking. The entire procedure is tape recorded and attention is paid to the improvement of the speaking skill of the participants. At the final meeting of the week, the group criticizes written analysis of particular decisions students have had to make at one time or another. The papers are projected on the screen and the skill of written communication as such is studied. Thus all skills, including that of listening, which is exercised during the lecture period, receive attention while the content of the week is directly related to the subject of the lecture.

For an example of the procedure followed when the lecture of the week deals with one of the forms of art, let us look at that which is related to the lecture entitled *The Formal Values of Painting*. The first group meeting is concerned with the reading of Clive Bell's essay "The Aesthetic Hypothesis." At the second meeting students give individual talks about the line, form, and color aspects of a painting which they select and project on the screen. Then at the last group session of the week, a written evaluation of a painting exhibited in the college art gallery at the time is handed in by each student and analyzed as a written piece of communication.*

* Instructors have found that the quality of writing is much better when the students write about paintings. Is it possible that the unity, rhythm, and harmony of a painting are transferred to this type of student writing?

Principles of good listening are stressed in the first lecture, *The Role of the Listener,* and students are required to hand in notes together with a short precis of each lecture. In addition, listening exercises are given during the first week of the semester and at the mid-semester and final examination periods.

A careful check of each student's work in listening, reading, speaking, and writing is made throughout the semester. The students who are found to be deficient in any or all of the skills are asked to participate in a Communications Workshop the following semester, where guided exercises in the various skills are conducted twice a week for a two-hour period. To follow through with the idea that effective communication is a requirement throughout life, faculty members in all departments examine written and oral reports for clarity of expression and may refer students to the workshop at any time during their college career.

With the fine arts introduced as forms of communication in the first semester, more sustained attention is given to them in the second semester. Literature, music, and painting are studied in turn as modes of communication with emphasis on practice as well as on theory. Short stories and poems are studied as media for expressing man's ideas and emotions. Their content and form are discussed orally and in writing with the instructor guiding continued improvement in both skills. Oral reading of stories and poems is recorded and played back for student self-criticism. In the music unit, students read *Listening to Music* by Douglas Moore and discuss the principles of the language of music under the leadership of a member of the Music Department. Listening laboratory periods are arranged so that the students can become aware of how composers "say it with music." Experiments are now in progress to study the relationship between the skill of listening to music and that of listening to oral communication.

The painting unit is unusual in a prescribed communications course. The students not only observe the artist-in-residence at the actual process of painting but also take a hand at the creative effort. The college provides all materials except brushes, and each student paints for three weeks under the tutelage of Emile Walters, internationally known artist. With a minimum of formal instructing, the artist encourages the art tyros to express their own feelings toward a still life. The results have been most encouraging. Sixty student paintings were exhibited last semester in the art gallery and the spectators were favorably impressed at the excellence of these expressions. The communication emphasis is maintained during this experience, for the students are taught to base their success or failure on the ability to express their emotional state toward the still life and to impart it to the spectator. Here too the student recognizes that the principles of clarity, economy, organization, unity, and coherence, stressed in the first semester's study of oral and written communication, are essential also in communicating by painting. He notices the similarity between the author's careful selection of vivid language and the artist's skill in color.

During the painting unit, interest is continued in improving reading

skills. The students read selections from *The Humanities* by Dudley and Faricy and from *Art Is for Everyone* by Martha Simpson.

The staff for the course is drawn from the Area of Arts, Letters and Philosophy, including members of the music, art, philosophy, psychology, modern languages, and English departments. Each instructor teaches all of the semester's units except those in music and painting in the second semester. In the latter units he participates actively together with his students. Frequent staff meetings for the purpose of in-service training are considered essential for the fulfillment of course objectives.

If Champlain College were to continue, reexamination of the course would be a constant procedure. However, even in the short time the course has been in operation, there is agreement that the course compares favorably with the former traditional Freshman English course in the development of student attitudes, interest, and achievement in the basic forms by which man communicates his thoughts and feelings to his fellow man.

RESEARCH NOTES

George A. Miller, "What Is Information Measurement," *The American Psychologist*, 8, 1 (January, 1953) 3-11.

This article gives a clear summary of several of the chief concepts underlying communication theory and measurement as thus far evolved from speech science, electronic engineering, and cybernetics. The measurement of the formulation, transmission, and reception of information may become basic for the study of communication, interpersonal relations, and human organization.

The comparison of the human being as an adjusting organism for the reception, evaluation, and transmission of information has many analogies to the intake, the channel, and the output of automatic machines. "For a good channel the input and the output are closely related but not identical. The input is changed more or less in the process of transmission. If the changes are random, the communication engineer talks about 'noise' in the channel. Thus the output depends upon both the input and the noise."

Information theory, thus far, does not attempt to deal with "meanings." Only the amount of information is measured in a given statement. This is done by counting the number of possible outcomes that the statement eliminates as it proceeds. "Nothing is said about whether the information is true, valuable, or understood—we are talking only about how much information there is . . . Everytime one alternative is eliminated, one unit of information is communicated." This unit is called one "bit" of information.

What we are going to say is conditioned by what we have just said. The context out of which the words come reduces the range of choice for the next words by the information which is given as to what the next item is going to be. "Thus when the next word occurs, some of the information is identical with information we have already received from the context. This repeated information is called 'redundancy'."

The article included an annotated selected list of references.

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PROPAGANDA AND CRITICAL LISTENING

Gregg Phifer

According to Knower's Index, the *Quarterly Journal of Speech Education* published its first article on listening in February, 1920, "Speech and the Learning Process" by C. H. Woolbert.[1] With increasing frequency as the years rolled on both the *Quarterly Journal* and *Speech Monographs* carried articles on listening. Without exception, however, writers have treated listening as a learning process. All discuss *listening comprehension;* not one considers *critical listening.* The same is true of sectional meetings on "Problems in Listening" at conventions of the National Society for the Study of Communication and the Speech Association of America. Three of the five reports at the Cincinnati convention in 1952 had "comprehension" or "learning" in the title.[2]

Is critical listening being studied by our colleagues in the social sciences? The problem has received some attention. For instance, the Seventh Yearbook of the National Council for the Social Studies—originally an organization of history professors—is entitled *Education Against Propaganda.*[3] Volumes of the *Public Opinion Quarterly* contain dozens of articles on polls and other ways of discovering public opinion. Writers tell how to improve business or government propaganda—publicity releases. But aside from articles by or on Clyde Miller and his Institute for Propaganda Analysis, the *Public Opinion Quarterly* has little or nothing to say on ways and means for inoculating students against the propaganda virus.

Persuasion is glamorous; critical listening is not. But if Americans are to resist the blandishments of demagogues and would-be dictators, to say nothing of super-salesmen, critical listening is a must. Listening should be an active rejecting as well as receiving process. This paper explores the ways and means of teaching students to be critical listeners. Three sections follow: first, "negative" or direct means of teaching critical listening; second positive or indirect techniques; third, two pressing needs in this area.

"Negative" means of making our students critical listeners include teaching of logic, propaganda analysis, and general semantics. Teachers of logic and rhetoricians who teach applied logic seek to create in their students the ability to recognize fallacies in thinking. The approach is basically the same, whether found in Aristotle or in the latest edition of Baird, Ewbank and Auer, or McBurney, O'Neill and Mills. Students are taught to watch out for hasty generalization, the sweeping statement that since Americans 1, 2, and 3 are greedy, all must necessarily be the same way. Teachers of argumentation expound, with examples, on the dangers of "*post hoc, ergo propter hoc,*" the assumption that because one event follows another the former must be "cause" and the latter, "effect." Students are warned that figurative analogies have no probative value and that literal analogies must be tested to learn whether points of likeness are not outweighed by points of difference.

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The second "negative" or direct technique for teaching critical listening is that of propaganda analysis. This is often an exposition of the famous seven propaganda devices listed by the Institute for Propaganda Analysis: bandwagon, plain folks, card stacking, testimonial, name calling, glittering generalities, and the transfer device. These labels are catchy and easy to remember.

These techniques have been and now are used in teaching critical listening. Clyde Miller taught a course in "Public Opinion and Education" at Teachers College, Columbia University.[4] Students kept scrapbooks with examples of each device. And a recent text in the fundamentals of speech, *General Speech* by Baird and Knower, includes in its chapter on "Critical Listening" both a few paragraphs on the fallacies and nearly as much more on the IPA list of propaganda devices.[5]

General semanticists also offer their suggestions and specialized vocabulary. Students of general semantics are warned to beware of identification, of two-valued orientation, of "allness" and other semantic disorders. Students are taught to use numbers and dates to stress the uniqueness of the individual and the changes wrought by time. Dog_1 is not dog_2, nor is $Russian_1$ the same as $Russian_2$. UN_{1952} does not equal UN_{1945}. The word must not be confused with the object. Does someone speak of patriotism? Ask him what he means. Make him discuss persons, places, and events. Get him off his plateau of high-level abstraction. Students skilled in these semantic devices should, so the theory runs, be highly resistant to the unsound appeals of the propagandist.*

In his article on "General Semantics and Propaganda" in the January, 1939 *Public Opinion Quarterly*[6], S. I. Hayakawa complained that "Zealots, fanatics, 'confirmed Republicans,' 'confirmed Democrats,' . . . are equally the victims of our primitive habits of mind—of objectifying their abstractions, 'knowing' therefore what things 'are,' ignoring the infinity of differences that exist between events." Thus the semanticists, too, attack propaganda and try to make listeners critical.

So much for "negative" or direct techniques for making students critical in their listening. Logicians and rhetoricians teach formal or applied logic, urging their students to be on the lookout for many kinds of crooked thinking or "fallacies." Propaganda analysts warn students about the varied devices by which the propagandist seeks to win uncritical acceptance for his ideas. And the general semanticists have created a vocabulary of their own to identify language disorders.

The second part of this survey considers "positive" or indirect techniques for stimulating critical listening. One method is to see that students hear both—or all—sides of controversial issues. In college this is called free discussion and paid careful lip service even where it is most completely ignored in practice. Perhaps an opportunity to hear unpopular opinion is even more important in the formative years of elementary and high school. Children

* It must be obvious that "propaganda" is used in this paper as a derogatory term. The writer is well aware that all do not agree with his treatment.

may need to meet, talk with, play with, and some to accept as civilized the personal representatives of potentially negative ideas. In one community this would mean the leaders of labor unions; in another, industrial owners or managers. Often JW's—Jehovah's Witnesses—or Jews, Negroes or displaced persons, are only unpleasant stereotypes to children.

A second positive or indirect method is discussed by William Biddle.[7] Students are to be taught the techniques of discussion, the steps of the reflective thinking process as described by John Dewey. The attitudes and practices of group discussion are, of course, contrary to those of propaganda. Students accustomed to examine problems with the inquiring mind of the discusser are scarcely in the most receptive frame of mind to accept the wily dodges of the propagandist. Accustomed to consider objectively various viewpoints, the discusser listens most critically when the propagandist seeks to sidetrack reason and ignore evidence.

A third indirect technique for making students critical in their listening is discussed in the same Yearbook by Howard R. Anderson of the State University of Iowa. His article is entitled, "Classroom Evaluation of the Awareness of Propaganda."[8] Anderson suggests study and practice of the historical method to help students acquire the inquiring mind most resistant to propaganda. Those trained in the historical method criticize sources severely. What was the primary source? What were the qualifications of that observer? Was he in a position to observe? What, if any, are his own biases?

Thus far this survey has considered the direct, "negative" techniques suggested by the logician, the propaganda analyst, and the general semanticist. Three educational processes that should—indirectly, positively—make students more critical in their listening have been summarized: exposure to other—especially unpopular—points of view, practice in group discussion, study of the historical method.

A third question demands consideration in a survey of this kind: What are the most pressing needs in the field of critical listening? Two are suggested here: Do educators want it? How can critical listening be taught?

Educators must decide whether or not they want students—elementary, high school, or college—to become critical listeners. These are the citizens of tomorrow. As listeners they might become critical of all propaganda, "ours" as well as "theirs." Certain public figures might wake up to find people laughing rather than weeping at their televised blarney. So-called "newscasters" accustomed to fulminate against communists in the State Department or spies in the United Nations might find listeners unwilling to accept unsupported assertion, wild accusation, condemnation without proof.

Do we want critical listeners? Or do we want to be able to sell the American people a bill of goods; war or peace or something in between? People who think with their hearts or bellies may be much more easily aroused to action than those trained in group discussion and the historical method. Slogans frequently produce signal reactions from uncritical listeners. Who knows? A people trained in critical listening might have been

less responsive to the cry of 1898, "Remember the Maine." That is easy to accept without shock; the Spanish-American War was over before most of us were born. But even "Remember Pearl Harbor" might have fallen on resistant ears. Then what might have happened to the aluminum drives and bond drives and so on? The question, therefore, is a good one. Do educators want to train students to become critical listeners? Or, to put the same question another way, do they really want *self*-government?

If the answer is yes, then the question arises, naturally, how? Six techniques have been suggested, three direct and "negative," and the others indirect and "positive." But how well do they work? Can students trained in general semantics, in the classification of fallacies, or the identification of propaganda techniques, identify those techniques in articles or speeches? How resistant are they to propaganda appeals? How critical is their listening?

Nobody seems to know. The literature of the field of speech, of education, of public opinion, of sociology, of political science contains little or no experimental work even closely related to the teaching of critical listening. One experimental study on teaching resistance to propaganda was completed by William W. Biddle and published in 1932 by Teachers College of Columbia University as its 531st "contribution to education."[9] In brief outline, here is what Biddle did. He wrote nine lessons on "Manipulating the Public." These lessons were taught by regular classroom teachers in six different schools. Though attempting to preserve as nearly normal classroom situations as possible, Biddle gave detailed instructions for the teaching. A pre-test and post-test of gullibility were administered to experimental and control groups in each of the six schools. This test sought to evaluate the student's susceptibility to various propaganda devices on subjects concerning the Pacific relations of the U.S.

Twenty-four judges were chosen: seven university professors, five graduate students, three lawyers, seven from the Institute of Pacific Relations, one housewife, two architects. Judges rated on a graphic rating scale the degree of fairness and probable truth of each article. The composite of their ratings made up the scoring key. Each student earned a positive or negative deviation, of greater or lesser degree, on each article.

Students labored over and protested at the test but gave generally consistent answers. What were the results of the experiment? Were students more critical after studying the lesson material? According to Biddle's statistics, experimentals gained significantly more than controls, the critical ratios for two parts of the experiment being 17 and 37 respectively.

Biddle's experiment concerned resistance to written propaganda. As a footnote to his experiment he took to school number five of a propagandistic speech utilizing a number of devices for creating ill will toward a foreign nation. The results were not clear. Only one student remarked that the speech was propaganda; he came from the experimental group. Twenty-four others disagreed with the speaker, eighteen of them being from the experimental group. Biddle confesses, however, that he didn't consider him-

self an effective speaker. After this last experience he wrote, "A learning which was measured for a literary situation may or may not transfer to a speech situation. In order to be sure of transfer, we should give the students experience in listening to and analyzing speeches which make use of emotional devices."

With this conclusion it is difficult to disagree. Students need to hear and learn to recognize propagandistic devices—or fallacies or symptoms of language disorder, if you prefer. And teachers need to measure their ability to do so, both before and after instruction. Educators need to be able to measure the results of the teaching of critical listening—if any. Units on propaganda devices or logical fallacies must be approached with some confidence that students will become more critical listeners as a result of instruction. Evidence is needed. Experiment is necessary. In the wealth of experimental work on listening comprehension critical listening must not be ignored.

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PICTORIAL AND VERBAL ELEMENTS OF EDUCATIONAL FILMS

Harold E. Nelson

The Chinese are repeatedly reported to have said that one picture is worth a thousand words. Persons involved in television and motion picture research are questioning the accuracy of this statement. Perhaps a picture will convey much more meaning than a thousand words or perhaps much less, depending upon the type of meaning that is to be conveyed. Some researchers in the audio-visual field have been concerning themselves with finding the relative advantages of the audio and video portions of educational films with different subject matter and under different viewing conditions. This research applies perhaps as much to television as to motion pictures. It is the purpose of this article to set forth some of the hypotheses about modes of presentation (aural and video) and some of the research that has been accomplished to the present.

Early audio-visual hypotheses set forth by J. A. McGeoch[1] and J. B. Stroud[2] include the following:

(1) The differences in amounts learned through the different modalities usually have been small and irregular in direction.

(2) No one sense modality, or mode of presentation, can be said to be generally most advantageous. (However, someone with a special interest can usually select evidence favoring his mode, e.g., the movie, or the radio.)

(3) In some experiments, auditory presentation has been rather consistently better than visual, whereas in other studies, the opposite results have been obtained.

(4) The use of both visual and auditory presentation in combination has usually been better than the poorer of the two used separately, and in some cases, superior to either one used alone.

(5) The particular mode of presentation that results in more rapid learning is a function of several possible accompanying conditions, of which the following have been identified:

a) *The learner's experience* If the learner is accustomed to use or is more practiced with a particular method, that form of stimulation may be superior.

b) *The learner's age* Auditory presentation of verbal materials is usually more effective for younger children, tending to become less effective as age increases.

c) *The type of material* Meaningful material is less affected by the mode of presentation than is the learning of separate or discrete items in a series.

d) *The learner's response to the presentation* The mode of stimulating the learner does not wholly determine the mode by which he appre-

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hends the material. For example, material received through auditory presentation may be immediately translated by the learner into visual images of words, spoken subvocally, or into implicit movements of writing or drawing, instead of mere auditory images of the orally-presented words. In studying spelling many pupils utilize visual imagery, regardless of the perceptual sense to which the words are presented.

e) *The learner's ability to utilize cues* Individual differences in ability to use cues from different sensory modalities do seem to exist and affect rate of learning from various modalities.

(6) Meaningfulness seems to be a more important factor in influencing learning than others, such as the sense modality stimulated, and the size, intensity, and color of the stimulus. These other factors seem to be most influential when they increase meaningfulness or motivation, direct the learner's attention, or operate in some way other than through their particular stimulating characteristics, *per se* (e.g., relative size influencing learning through novelty).

Some of the above hypotheses and others have been subjected to experimental testing procedures. Nelson[3] in a study using educational films ("Theory of Flight" and "Problems of Flight") found that those who only saw the film obtained superior scores to those who only heard the film narration. This result was unexpected in that the film was biased in favor of the audio portion.

The test questions were divided into those that were based on the audio portion of the film, those that were based on the video portion of the film, and t.ose that were based on both. The *video* factor was found to be more important in the *theory* film but the *audio* factor was more important in the *problems* film. Certain items on the test were best answered by those who heard and saw the film. A slight advantage was found for those who heard the sound track in the dark as compared to those who heard the sound track in the light.

Nelson and Moll[4] in a continuance of the study cited above used a film titled "Land and Live in the Desert." The control group (no film) received the lowest score in this study and the group that both saw and heard the film obtained the highest average score. In this study, in contrast to the earlier study, the audio group, those that only heard the sound track of the film, held a slight advantage over the video group (those that only saw the film).

Both of the above studies proved that the audio and video in combination produced the best learning results. However, the two elements were not additive in their effects. In other words, if the audio portion contributed a quantity X to learning and the video contributed Y, the combined result of the audio and video might be $X + Y$, but it could also be more or less than $X + Y$ depending upon the content of the film or telecast, the camera techniques, the audience and other factors.

In a recently conducted experiment Nelson and VanderMeer[5] attempted to ascertain the effects of the following variables on learning from an educational film on meteorology:

(1) Varying the sound tracks from the originally produced film in the following ways:

a) Increasing the number of personal pronouns, using active rather than passive voice, shortening sentences, employing verbal transitions and simpler words.

b) Increasing the number of verbal definitions, analogies, explanations and repetitions.

c) Reducing the number of words and details, simplifying the language, and directing attention to the video element of the film.

(2) Presenting the film complete with sound track and picture as compared with playing the sound track alone.

There was no significant difference statistically among the various versions of the sound track, however the version that had a greater number of personal pronouns, shorter sentences, simpler words, verbal transitions and active rather than passive voice was consistently better than the other versions.

Those students that both heard and saw the film earned a significantly higher score than did those who only heard the sound track.

VanderMeer[6] in a study of the relative contributions to factual learning of the pictorial and verbal elements of a filmstrip (filmstrip was based on historical subject matter and used mostly artists' drawings and a few photographs) found in some instances that "the pictorial element of the filmstrip contributed little or nothing of value in the learning situation, and in some cases the pictorial presentation seemed so deficient in detail or clarity that it may actually have served to inhibit learning." This is an obvious fault of many educational films; the pictures are used merely as a backdrop for the commentary—and it can easily be a fault of educational telecasts if thought is not given to the intelligent use of this new medium.

Several other relevant studies pertaining to the audio elements of films have been made. Park[7] found that shorter sentences promoted a greater amount of learning. Jaspen's[8] study indicated that a medium level of verbalization (approximately 100 words for each minute of film) was most effective. Zuckerman[9] also found that "with a military population directive statements in the film commentary which used the imperative mood, or the second person active, were more effective in promoting learning than the third person passive type of statements." Zuckerman further found that "leading" commentary (commentary starting slightly before action is shown) "seemed to promote more learning than a 'lagging' commentary" (action started before it is mentioned in commentary).

Hoban and van Ormer[10] have well summarized the subject of visual versus auditory primacy:

> The question of visual versus auditory primacy is still far from being settled. Studies, such as those of Nelson and Moll, show that when the visual and auditory elements are used together, they may supplement each other and result in greater learning than from either one alone.
>
> The question of the importance of the visual element in instructional motion pictures is not a problem of *absolute* primacy or a *single mode* of presen-

tation. Rather it is a problem of *relative* primacy. In other words, to what extent should one mode be emphasized over another under various conditions, and how well does that emphasis relate to the behavioral objectives of the instruction?

Nevertheless, it seems that the effectiveness of a motion picture and telecast should depend primarily on the strength of the visual presentation (that is, by means of objects, processes, symbols, and words portrayed in the pictures,) and secondarily, on the accompanying oral language. If the emphasis is not visual or if the pictorial presentation does not add materially to the learning, why, as VanderMeer's filmstrip study implies, take the trouble and expense of producing a filmstrip or motion picture or telecast?

Our eyes, when we are not reading, are used to perceive the world around us. Language may direct and facilitate that perception, but the real visual perception occurs only when the learner arranges *visual impressions* into a pattern that means something to him. Once the pattern is formed, language, again, may help us to articulate our discovery and communicate it to others. But language is not always helpful, since as some studies have shown, certain types of film commentary may actually interfere with rather than facilitate learning from pictures. This also occurs when the pictures and sound track are not directly related to one another. To be most effective the picture and commentary must be *directly* related to one another in both films and television.

The implications of the principle of the relative primacy of the visuals are of greater importance in film and television production than in utilization. For example, this principle implies that no motion picture or telecast should be approved for production unless the subject lends itself to fluent visual presentation that can be well specified. Secondly, visual thinking should predominate over verbal thinking in the over-all production process. For this purpose, the story board is likely to be more useful and efficient than the purely verbal script. In planning a film or telecast, we should continually ask ourselves, "What do we want to show *visually*?"

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RESEARCH NOTES

William Allen, "Readability of Instructional Film Commentary," *Journal of Applied Psychology*, 36, 3 (June, 1952) 164-168.

Four readability-graded commentaries were written for each of two instructional motion pictures and were delivered from tape recording during presentation of the films to sixth-grade students. Written tests contained multiple-choice questions and completion questions about the content of the films.

Readability of the commentaries had a measureable effect upon learning. Commentary written one grade-level below the grade-level of the subjects resulted in significantly greater learning than did commentary written one grade-level above. Flesch, Dale-Chall, and Lorge readability formulas were about equal in predicting comparative readability, but the Lorge formula consistently predicted a reading level approximately two years lower than the Flesch reading ease formula and the Dale-Chall formula varied in its prediction. Use of questions, imperatives, and personal pronouns resulted in greater learning. It was tentatively concluded that creation of an outline or enumeration of facts to be learned resulted in much greater learning than when such procedure was not used. Length of passage had no measureable effect upon learning from films.

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SOME PERSISTENT QUESTIONS

Eugene E. Myers

(Some of these questions can be answered, partially, at least, by members of NSSC. The *Journal* will be glad to publish open letters to Col. Myers from those who have ideas about the answers. THE EDITOR)

We in the Air Force realize that our efficiency and effectiveness is in a large measure contingent on our facility in the communication of facts and ideas. Around the clock, our work requires that we write clearly, read efficiently, listen effectively, and talk so that others can understand us. It is not practical for the Air Force to do fundamental research in many of the areas of communication. We have neither the time nor the money. We find it difficult to read and digest even a portion of the results of research that is being done in this field. Yet the Air Force needs this information and those in the field of communication can help us to get it. On a number of occasions I have been asked to suggest projects which might be generally useful to those of us in the military. As a result, I have assembled some tentative suggestions of areas where solutions would be of real interest.

How can we, for example, with a minimum of pain and effort, discover the significant research findings on how to speak and write effectively?

How can we tell what is being found out without setting up our own research and library staffs?

Who has developed the most effective techniques for teaching people to write and speak well?

How can we determine whether A's findings are as good or better than B's?

Who among the experts now available is best able to provide analysis and synthesis of information currently available?

Just what is being done by researchers across the country which we should know about?

Can the summaries of dissertations and studies now appearing in speech publications be digested in more useable form for our use?

How do we go about getting information concerning who in the speech business is available for consultation assignments? And how do we find out about the special talents they can bring to bear on military problems?

How can we do speech training when we have a minimum length of time in which to do it? What people have been successful in programs of this sort?

Is there a master list of graphic or audio-visual aids available for helping speakers and writers to improve their abilities?

How can we painlessly and inexpensively find out how effective we are in our presentations? What yardsticks are available to us for developing our own effectiveness?

These are questions for which we are constantly seeking answers.

COLONEL EUGENE E. MYERS, Chief, Presentation Support Div., Office, Secty. of the Air Staff, Hq. USAF. This paper was presented at the NSSC convention in Cincinnati, December 29, 1952.

SOME RECENT FINDINGS ON THINKING ABILITIES AND THEIR IMPLICATIONS

J. P. Guilford

The findings in this article come primarily from studies that have been under way for three or four years at the University of Southern California. For the financial support of these studies we have been indebted, first to the U. S. Navy Electronics Laboratory in San Diego, second, and primarily, to the U. S. Navy Office of Naval Research, and third, for one study, to the U. S. Air Force. The U. S. Air Force also contributed the aid of its testing facilities. Without aid from these sources these investigations would not be possible.[1]

The findings have come through the application of the techniques of factor analysis and they throw considerable light on important aspects of intellectual abilities and functions. I shall have much more to say about the findings than about their implications. Our findings are suggestions about the nature of thinking and of intelligence that may eventually contribute to basic psychological theory. There are more direct implications for vocational psychology—for theory of aptitudes and for practices of selection, classification, and guidance. Very little psychological theory is without its implications in the field of education, hence our results should be of some interest to educators.

Although thinking is usually regarded as man's highest and most useful function, progress toward its understanding has been slow. Progress in the understanding of any subject is indicated roughly by the number of useful and enduring concepts that have been invented to describe it. The terminology with which we describe phenomena of thinking is essentially that of our prescientific psychological ancestors. The textbook terminology includes such terms as induction and deduction, abstraction and generalization, inference, and concept formation. Gestalt psychology added the concepts of closure and insight. Spearman proposed the concepts of *eduction of relations* and of *eduction of correlates*. By *eduction of relations* he meant that when we are presented with two objects we can see relations between them. By *eduction of correlates* he meant that when we are presented with an object plus a relationship we can think of a second object to complete the picture—two objects in relation. Neither set of concepts has gained much currency.

One suspects that there must be something wrong with concepts which, although well accepted, have made for so little progress. Terms like induction and deduction were inherited by psychology from logic and in that context they bore a suggestion of clearcut opposition which was deceiving. Even logicians now realize that in application they do not represent clear oppo-

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sites. The terms have served with enough descriptive value for psychologists, however, to keep them alive as working concepts.

The subject of thinking is closely allied to that of intelligence. It is a curious turn of events, however, that factor analysis has revealed the chief component of most of the intelligence tests now in use to be not a primary thinking ability but the primary ability known as verbal comprehension. Verbal comprehension might be classified as a thinking ability, since it implies mastery of concepts, and concept formation is a form of thinking. Verbal comprehension is best measured by a vocabulary test, however, and one that does not necessarily call for every profound knowledge of word meanings. A reading knowledge seems to be all that is necessary. The verbal factor correlates very highly with most measures of school achievement. That is why it has gained such a prominent place in intelligence tests. This is one of the reasons factorial studies in the realm of thinking abilities are so important.

Perhaps it is desirable at this point to say why we may expect to determine anything about the nature of thinking abilities and functions by means of factor analysis. Factor analysis is a systematic procedure for summarizing intercorrelations of scores or other measures. Intercorrelations are measures of the covariations in behavior. Covariation is one of the most common evidences we have of order and system in nature. One could study the covariations by other methods than that of factor analysis, but as yet there is apparently no other as efficient or as searching as that of factor analysis. If one wanted to find the unique, independent measures of abilities, for example, he could keep hunting until he finds tests that correlate zero with all other tests except those measuring the same ability. This would be an expensive and time-consuming procedure.

Once we have found measures of a unique ability, by whatever method we may use, what do we have? The practical vocational psychologist may be satisfied in having identified such an ability and in having determined what tests he needs to measure it. The average psychologist, however, would be dissatisfied with this. He would be struck by the fact that here is some unitary and stable property of individuals that is characterized by tests of certain common features. He would interpret the factor and give it a psychologically meaningful name. The named primary ability is merely a label for the whole body of observed data that indicate some systematic fact about behavior of a certain character.

When it is properly applied to the study of any area of behavior, factor analysis by no means carries the entire burden; it is used merely as a helping tool. In an investigation aimed at the illumination of the basic abilities or functions in a certain area, it is used to test hypotheses we may have concerning those abilities or functions and to suggest new hypotheses where new hypotheses are needed. Much of the time of the investigator is spent in speculating about the nature of the separate abilities in that area, starting from anything he knows about it derived from any promising sources. The analysis should give him some answers regarding the accuracy of his hypo-

theses. Such answers are never fully decisive but they rarely fail to add some light where light is needed.

We have not attempted to cover the whole realm of thinking abilities in any one analysis. For convenience we have approached each of several domains separately—one domain comprised of reasoning abilities; one of creative-thinking abilities; one of evaluative abilities, including judgment; and one of planning abilities. After studying each one separately we will investigate them in combinations to see what they may have in common. We have completed two analyses of reasoning abilities and one of creative-thinking abilities and we are well on the way in a study of evaluative abilities.

Definitions are probably overdue. As defined in my *General Psychology*,[2] *thinking* is the broad term that includes all symbolic behavior. Symbolic behavior uses symbols as substitutes for perceived things. The symbols may be in the form of such things as muscular sets, images, or concepts. There can be objective evidence for the occurrence of any of these, though it must usually be indirect. *Reasoning* is defined as thinking directed toward the solution of a problem. Its common outcome is a conclusion or inference. *Creative thinking* is the production of new mental constructs that become evident in such things as scientific theories, novels, paintings, and musical compositions. *Evaluation* is critical thinking by which steps or end products are accepted or rejected. In evaluation, decisions are reached as to whether they measure up to some criterion. The concept of *planning abilities* follows the popular meaning of the term. The abilities found involved in planning activities may, after all, reduce to those also found in the domains of reasoning and creative thinking.

What was the situation with regard to the understanding of reasoning abilities, let us say, roughly, as of 1950? Binet, Terman, and Spearman regarded all tests of thinking, including reasoning, as measures of a single master ability, intelligence. In his first study of primary abilities, Thurstone distinguished three reasoning factors. One he called inductive reasoning (the discovering of rules or principles), and the second he called deductive reasoning (the application of rules). Inductive ability was found most loaded in tests involving the discovery of relationships. Deductive ability was found most loaded in syllogism tests of the true-false type. The third factor was a prominent feature of an arithmetic-reasoning test. He defined it as reasoning under restrictive conditions, meaning by this that the arithmetic problem as given prescribed the boundaries for thinking. A number of studies have verified the so-called inductive and deductive factors but rarely the restrictive-reasoning factor.

In the wartime research in the Army Air Force, the factor repeatedly found prominent in an arithmetic-reasoning test became known as *general reasoning* because it also appeared in so many other types of tests. Two other reasoning factors were found but they could not be clearly defined as either inductive or deductive. There was no reason to expect Thurstone's deductive factor because no syllogistic tests were used. Briefly, this was the situation at the time we began our analyses of reasoning abilities.

We are now satisfied that the general-reasoning factor in the AAF and Thurstone's restrictive-reasoning factor are the same. It continues to be baffling as to interpretation because of its appearance in so many different kinds of tests. The arithmetic-reasoning type of test continues to be its most faithful indicator. Our present conception is that it is an ability to structure a problem preparatory to its solution. It is necessary to relate two or more facts in doing so, and the likelihood of much trial-and-error thinking during the grasping of the problem seems to be a common feature.

Next to the verbal-comprehension ability this factor is probably the strongest contributor to the total variance of intelligence tests. One of my students has found a test of this factor significantly correlated with grades in most types of college freshman courses, though usually correlating with them less than does a test of the verbal factor.

Among tests of the inductive type, we have found evidence for three factors, two of which came out in both analyses. The key to these factors is the examinee's discovery of something. The first inductive factor, eduction of *perceptual* relations, is characteristic of tests whose items are in the form of figures.

The second, eduction of *conceptual* relations, is characteristic of tests in which the items are composed of numbers, letters, or words. The third, eduction of *conceptual patterns*, occurs in tests with both figural and non-figural content. The thing discovered is a system of relations.

Two of these inductive or discovery factors were verified in a second analysis and must therefore be given much credence—the eduction of perceptual relations and the eduction of conceptual relations. The separation of relation-seeing abilities along these lines is psychologically interesting. Gestalt psychology, especially, has emphasized the continuity of perception and thinking. This line of theorizing would lead to the belief that discovering relationships is the same function whether the things related are perceived figures or ideas or concepts. The separation of these two discovery factors indicates that this is not so. In general, this finding warns us not to assume too much generality for any ability or trait that we may hypothesize. It also demonstrates the importance of determining the degree of generality possessed by any trait, for our range of prediction of behavior is definitely limited by the scope or range of applicability of the trait.

In the area roughly known as deduction, we have found two factors. One of these is what Thurstone calls deduction, and, as usual, it is best measured by means of syllogistic types of tests. It should be pointed out that these tests have been of the true-false or multiple-choice form. The examinee may possibly draw his own conclusions from the facts given, i.e., he makes a deduction, but by the very nature of the test items, he has conclusions given to him and all that he has to do, essentially, is to decide whether they are consistent with the premises. It is possible, then, that the essence of this so-called deductive factor is not the ability to *draw* conclusions but the ability to *evaluate* conclusions; to decide whether they are logically consistent with the premises. We have consequently tentatively

renamed the factor *logical reasoning* and have defined it as a sensitivity to logical consistency. The ability may belong rather in the domain of evaluation and we are making an intensive study of it in that connection. In order to determine whether there is another factor representing an ability to draw conclusions, we are including some syllogistic tests in *completion* form, in which the examinee will have to draw his own conclusion. He will, to be sure, also exercise some logical evaluation in deciding whether the answer he gives is a correct conclusion, and to that extent the syllogistic test in completion form would also measure the factor of logical reasoning. It remains to be seen whether there is in addition a genuine deductive or inference-drawing-ability factor as we have predicted.

The second factor in the deductive area we have called *eduction of correlates,* to borrow another of Spearman's terms.

Let us now turn to the domain of creative thinking. In his preliminary search, Binet regarded imaginative thinking as an important aspect of intelligence, and he sprinkled a few tests requiring inventive thinking in his scale. Any unique variance that these tests may have contributed to the total determination of a mental age and an IQ was evidently completely overshadowed by variance in other abilities. This is true also of the Stanford Revision. In group tests of intelligence there is usually to be found none of it. And yet, of all the achievements of human intellect, those of greatest social importance have been of the inventive kind. Had the practical criterion of intelligence included creative production, we would have had quite different intelligence tests. Instead, the criterion has usually been docile grade-getting, which calls for measures of noncreative abilities to predict it.

In this connection I might refer to the U. S. Employment Service battery of tests of primary aptitudes. I am definitely in sympathy with their principle of using several unique scores rather than one composite score. But, as the U. S. Employment Service itself recognizes, the aptitudes are much restricted to non-intellectual factors, which are important in skilled and semi-skilled types of labor but which do not begin to take care of the persons in professional types of work. The two aptitude scores representing verbal comprehension and general reasoning cover fairly well the variance in traditional intelligence tests, but they fall short when it comes to distinguishing persons of promise for professional and administrative functions. Extension of measurement to the reasoning factors I have mentioned should be a great help in this direction. For some purposes the extension should also include the creative abilities which I will now discuss. In this connection, please keep in mind that the findings here are from a single analysis and for the most part need verification.

With the research scientist particularly in mind, we hypothesized an ability to see problems, or to be sensitive to the existence of problems. How general this sensitivity might be we could not predict. It might include sensitivity to defects, deficiencies, gaps in our knowledge, incongruities, and even the odd and the unusual in general. The analysis showed a factor of this type but it appears to be limited to the sensitivity to defects of a practical

nature, such as those in gadgets like the telephone or refrigerator or those in in social institutions, such as elections. It was established, however, that the person who is likely to see defects in mechanical things is also likely to see them in social institutions. Two such tests correlate very substantially.

It was thought that all types of creative people have in common a fluency of ideas. In such people stimuli touch off a rapid flow of thinking responses. Previous to our study of creativity a number of fluency factors had been found and verified. We had the problem of determining whether there would be any new types discoverable. Our findings verify the three best established types of fluency and reveal no new type. These three types are as follows: There is a word-fluency factor first discovered by Thurstone. This is apparently a rather superficial type of fluency, in which word meanings have no essential role. It is merely the ability to call up rapidly words with which one is very familiar. There is an associational fluency in which word meaning is an important condition. The ease with which one can think of synonyms or opposites or words meeting other specifications indicates the nature of the ability. The third factor in this area is ideational fluency, involving the speed with which one can call up ideas that are related to a given topic or that serve a certain purpose.

Concerning the social importance of these fluency factors we can readily speculate. It would seem that the word-fluency factor has little social significance. It should be useful in such games as cross-word puzzles, where words as letter patterns are emphasized, little more. It may be of some consequence in reading, but only under difficult conditions of illumination, etc. [EDITOR'S NOTE: Or in listening under conditions of poor intelligibility?]

The associational-fluency factor is probably of considerable importance for writers and lecturers where one wants suitable words to be readily on tap. Whether accuracy of expression is facilitated by this ability is hard to say. But the descriptive writer who wants to liven his product by injecting variations of terminology should find the ability very useful.

Of the three fluency factors, that of ideational fluency is probably of greatest importance in the lives of creative people in general. When one is faced with a problem, in defining the problem he usually thinks of one hypothesis after another. The ease with which his store of potential hypotheses can be aroused will determine in part how quickly a good hypotheses comes along. After he has defined the problem, again, he thinks in quick succession of many possible solutions. The more rapidly he can call up possible solutions the more quickly he may reach one that will be accepted. In the process of evaluating either hypotheses or solutions, too, he needs to call up the implications of each one so that he can weigh it properly. Being able to see quickly the several consequences of one's proposed actions leads to a greater proportion of wise decisions.

We hypothesized that the creative person is a *flexible* thinker. He can break away from old habits of thinking and strike out in new directions. He is not rigid in a way that would make him stick to, or come back repeatedly to, wrong ideas or solutions.

Our findings show two flexibility factors. One of these appears in tests in which there is considerable freedom of response, as in a fluency test. In one fluency test we asked the examinee to name all the uses he could think of for a common brick and he was given eight minutes to do this. The fluency score was the total number of responses he gave. A flexibility score, based on the same responses, was the number of times he changed classes of uses. Some examinees confine their total list to one or two categories, such as the use of bricks in building or as a missle for throwing. Other examinees often change categories, giving few responses per category. The two scores are relatively independent. We have, then, a spontaneous type of flexibility, a lability of mental set, which, in the extreme may entail a discursive type of thinking. In the pathological extremity we may have the manic flight of ideas or the circumstantiality of the senile. Those pathological conditions are worth studying from this point of view.

Spontaneous flexibility is probably not a great advantage to the creative person who must solve problems, such as the research scientist. In such connections there must be much goal-directed thinking. Too low a degree of the trait, however, might mean a rigidity that is inhibiting. This ability or trait is more likely to be of importance to writers like Gertrude Stein and to writers of comedy. I would expect the pun maker to stand high on this factor and in our next study of creativity there will be a pun-making test.

The second flexibility factor occurs in tests in which there is problem solving and in which the type of solution changes radically from problem to problem. In more general terms, the solution of each problem is facilitated by the ability of the examinee to break away from former habits of thinking and to do things in a new and unusual way. In one test, for example, he solves very simple numerical equations but under the instruction that a plus sign now means multiply and a division sign means add, and so on. A person who is bound to his habits will have difficulty in such tests. Such a person is probably not going to solve problems in life readily when new methods are required. I think it is with respect to this trait that our educational practices sometimes do much harm. We teach students to depend too much upon tried and successful methods taught in textbooks. They come to believe in the universal validity of those methods and ways of thought, with the consequence that where those methods and ways no longer work, as one often finds, he is sunk. The trail blazers in any field are those who are not habit-bound or custom-bound in their operations and outlooks in that field.

We are accustomed to think of the heart of creativity as being originality. Efforts were made in our investigation to approach the measurement of originality in quite a variety of ways. One approach was the scoring of responses by weighting them in proportion to their degree of statistical uncommonness in the population. This was in completion tests whose items were open-ended, i.e., the examinee could give any one of a very large number of responses, as in projective tests. The more unconventional his response, the less commonly it was given by others, the more weight it

received. Another approach to the measurement of originality was by means of remote associations. The items of such tests called for the examinee to see farfetched connections or rare and uncommon associations. In one test we asked for the listing of consequences of specified social changes, such as the repeal of all local and national laws. A fluency score was the total number of rather obvious consequences given. An originality score was the number of remote or indirect consequences given. A third approach to originality was in terms of ratings of the degree of *cleverness* of responses. In one fluency test the examinee was to name as many titles as he could for a short story. The responses were separated into two categories, clever and not-clever. The number of clever responses was taken as an originality score.

All three approaches proved to give measures of a single common factor that could be called originality. In view of the variety of scores developed for this purpose we should not have been surprised to find two or three factors in this area. The finding of only one and the discovery that there are so many ways to measure it was a very happy result, for some of the scoring methods are quite laborious and some are quite subjective and thus the better methods can be selected.

One very interesting finding with respect to the originality factor is its apparent bipolarity. By this we mean that some test scores were negatively related to it. High scores in some tests mean low originality and low scores mean high originality. When we examine these tests we find that as a group they are multiple-choice tests and that they are of the best-answer type. Furthermore, there is usually no one incontestable right answer. The key is made up by decision of the test maker or by consulting the consensus of responses. In other words, the conventional response is the keyed response and it contributes to a higher score. The unconventional response is penalized by being called wrong. The examinee who gives an unconventional response may actually be doing a clever thing and if he could explain his reasons one might feel compelled to give him credit.

There is an important moral in this for educational practice, especially in connection with achievement examinations. Like many other teachers I have for years used the objectively scored type of examinations. I still believe that their virtues are many, but our finding that the original person may be penalized by this type of examination should make us pause for thought. I do not think that it is the multiple-choice form alone that sins in this respect. If one gave credit only for conventional responses to completion items the original person would also be penalized. One should not assume, either, that by contrast to multiple-choice examinations the essay examination is necessarily a measure of creativity. If the student knows or suspects, as he has good reason to suspect, that his examination paper will be graded on how well he repeats the ideas of the text or of his instructor, he will have little inducement to be creative in an essay examination. And if the one who marks the paper gives credit only for conventional statements, this form of measurement, too, will penalize the creative student. It is not

the form of the examination, then, that favors either the creative or the conventional student. It is the educational philosophy of the instructor and of the marker of examinations, the way in which the examination is written, and the way in which the scoring key is set up. One device I have used for several years in connection with multiple-choice items is to urge the examinee to write a brief explanation of his response if he has any doubts about its being the keyed one. He is given credit for a well-supported non-keyed answer. It might be good practice at times to *require* the examinee to explain every answer he gives, particularly in true-false tests, for I have a hunch that the creative student often feels so much confidence in a wrong answer that he does not attempt to explain it even when he has a chance.

One additional factor was found in the domain of creative thinking. From Gestalt psychology we derived the idea that an important quality of inventive people is the ability to redefine the functions of sticks, boxes, and poles, in order to adapt them to their use as tools. Many a person in a practical situation has been able to solve his problem by adapting one object or a part of it to a new use. The apparent psychological element common to such improvising is the dropping away of old functions for things and the attaching of new ones. One might thing that the factors of flexibility and originality would take care of this function. Our tests of improvising ability showed practically no relation to those factors, however, but had in common a separate factor which could be called *redefinition.*

What is the practical significance of these findings concerning reasoning and creative-thinking factors? As each factor was mentioned I have usually said something about its specific implications, but something remains to be said concerning the more general conclusions that we might draw.

For vocational psychology the findings I have reported have a number of important meanings. For one thing, we need to enlarge once more our ideas concerning the probable number of aptitude factors that exist.

Educational practices are likely to be affected somewhat through changes in ideas about vocational aptitudes and in vocation practices. Our findings may thus indirectly affect education through their effects on vocational theory and practice. There should be more direct effects, however, on educational theory and practice.

For as many years as I can remember, it has been announced as an important aim of education to make students think and to train them in thinking habits. In view of how little we have known about the psychology of thinking this is a little like attempting to train a student in a sport concerning which no one knows much about the rules. I believe that with more accurate knowledge of the thinking abilities we can do a much better job of teaching others how to think. Goals will become clearer. The kinds of exercises needed by the student to approach those goals will be more apparent.

It may be assumed to start with that each primary ability or its utilization is something that can be improved by training. Until we have at-

tempted to develop it by training of an appropriate sort we will never know whether it can or cannot be so developed.

If we wish to train students to be creative producers, the creative factors should give us much to think about. Like most behavior, creative activity probably represents to some extent many learned skills. There may be limitations set on these skills by heredity, but I am convinced that through learning one can extend the skills within those limitations. The least that we can do is to remove the blocks that are often in the way. Everyone can be creative to some degree in many ways. Recognizing this simple truth is another big step. The rest depends upon practice, practice, practice. Society's responsibility is to provide favorable environment and education and the appropriate rewards for creative production.

REFERENCES

1. The major contract is known as N6onr-23810. Neither the Navy nor the Air Force necessarily endorses our opinions or conclusions. A number of psychologists have been associated with me in these studies, among whom I should mention Andres L. Comrey, Russell F. Green, Paul R. Christensen, and Robert C. Wilson.
2. J. P. Guilford, *General Psychology*, 2nd ed., (New York: Van Nostrand, 1952).

RESEARCH NOTES

Robert T. Hamlett, "Technical writing grows into a new profession: Publications engineering," *Proc. of the I. R. E.*, 40, 10 (October, 1952) 1057-1060.

Problems of communication of highly technical information from engineer to engineer, and engineer to technician to layman has made a necessity of developing "publications engineers." The publications engineer is not just an editor, but directs the publication from the sources of the information through the actual distribution of the printed work. He must be an engineer of broad interests and understand the principles and techniques of the best explanatory styles of writing. The author describes a typical publication engineering project. F. C.

REPORT ON THE SECTIONAL MEETING: COMMUNICATION IN THE MILITARY SERVICES

Edward J. Holder

The symposium on Communication in the Military Service was chairmaned by Hugh F. Seabury, State University of Iowa. Following are summaries of the participants' remarks:

Lt. Colonel Harold J. Catt, Chief, Academic Instructor Division, Air Command and Staff School, Air University, Maxwell Air Force Base, Alabama, spoke on **Objectives and Scope of Instructor Training in the Air University.**

Because of the nature and scope of Air Force activities, formal and informal instructor training has been established in many organizations. The Air University has established a formal program at Maxwell Air Force Base. It is called the Academic Instructor Course.

The mission of this course is "to develop in selected personnel those attitudes and abilities necessary for them to be effective Air Force Instructors." A wide variety of personnel is selected. A typical class may include Airmen 2/C and Colonels; high school graduates and PhD's; 18 year olds and 50 year olds. The course is primarily concerned with competence in teaching, not subject matter to be taught.

Individual instruction is the keynote. There is one instructor to approximately seven students. Seventy percent of the instruction is in the form of small group work in which the instructors observe and supervise students in discussion and applying the principles taught in the course.

The course is divided into three general subject areas. The first is Communication Skills. This includes lectures on the theory of communication, instruction and practice in the use of instructional aids, and graded exercises in speaking and writing.

The second area is Evaluation. This area receives special emphasis with most time spent on construction and analysis of objective test items. Instruction and exercises are also given in the evaluation of motor skills.

The third area is Educational Methods and Materials. This includes lectures and discussions on principles of learning, requisites of an instructor, lesson planning, curriculum planning, counseling and guidance, group dynamics, supervision, philosophy, and the various methods of teaching.

The total plan for increasing the effectiveness of Air Force instructors is to try to combine theory and practice in planning, preparing, and presenting effective periods of instruction.

Corwin D. Cornell of the staff and Faculty, the Adjutant General's School, spoke on **The Meaning and Importance of Communication Skills in Teacher Training.**

CAPTAIN EDWARD J. HOLDER—Recorder, NSSC Committee on Communication in the Military Service, Hq. Air Force ROTC, Montgomery, Alabama. The papers reported here were presented at the NSSC convention in Cincinnati, December 31, 1952.

Communication skills include those skills necessary for effective speaking, writing, reading and listening; they are the hub of the instructor training wheel.

The instructor training program for the Adjutant General's School also serves the Army Finance School. Three people accomplish the program and also teach communication skills in other courses in the school. Approximately 130 students go through the program each year.

The communication phase of the program emphasizes applications–not theory. Fundamentals are stressed and there are two primary objectives: (1) Development of self-confidence through proficiency in speaking and (2) development of the ability to organize materials for presentation.

Through a follow-up program each instructor in the schools is audited and a record kept of his improvement. These records serve as studies for re-training schedules based on individual needs.

Emphasis throughout the course is on oral communication; however, there is a reading improvement program and the "Guide to Air Force Writing" is used to improve writing.

Thomas Farrell, Jr., State University of Iowa, spoke on **A Course in "Technical Writing" for Engineering Students.**

The course in "Technical Writing" for students in the College of Engineering at the State University of Iowa is required for all students who wish to take a degree in any branch of engineering. There are two courses, one the prerequisite for the other. Each course meets twice each week for 31 weeks. A maximum of 15 students per section has been set, for each teacher grades the papers of each student and does much individual instruction in interviews.

The work is focused on rhetoric. Grammar is reviewed by means of a drill book and a set of tests which the students are required to pass, but on which no class time is spent. The required papers are all adapted to the interests and the future work of engineers, but our objectives are to teach the students to express their thoughts clearly and to adapt their presentation to their materials, their purposes, and their audiences. The style required in the first semester is objective, concise, cold, directly to the point, crystal-clear; that appropriate to intra-office memoranda. In the second semester, style is more colored, interesting, attractive; appropriate for articles, letters, and speeches. Half the time during the second semester is given to "oral composition," a type of speaking which is easy and informal. We have not enough time to attempt to teach more pretentious styles of addressing groups. Moreover, most of the speaking engineers will do will be in conferences in which they are either in colloquy or are giving very short talks to their peers.

Our methods for reaching our objectives are various and interrelated. We assign various forms of papers, but each requires application of the same rhetorical principles. We accept no papers which do not reach a minimum standard, requiring that the student do them over until they are adequate.

We lecture directly on rhetoric intermittently and regularly on the form of paper required for the next assignment. Then we pass out hectographed essays on rhetoric and on the form of paper to be written and examples of this form. We read each day's papers very carefully, and discuss them in class at the next meeting.

To teach students to continue to use their skill even when they are not writing under the eagle eye of an English teacher, we employ graders to check the composition of reports submitted in engineering laboratories. These graders are engineers who are majoring in the department to which they are assigned and who have mastered our courses with better than average achievement.

Because our engineering faculty is convinced of engineers' needs for skill in communication, this program has been reasonably successful. We have been able to set and to maintain high standards because we have the support of the faculty. This factor is of the utmost importance to any service course outside the specialized field of engineers. It removes the block which so often exists between the student and the teacher of the service course. In the time we have, we can develop only so much skill in men who come to us prepared only in a freshman composition course. We realize that we have more time than certain rapid fire programs allow but that we have less time than a perfect program requires. The important fact is that we can honestly and realistically expect a certain amount of development without being expected by the engineering faculty either to be slip-shod or to work miracles. This has permitted us to work out an effective course for our special circumstances.

Neal B. Andregg, Educational Consultant, Provost Marshal General's School, spoke on **Desired Outcomes of Instructor Training.**

Since learning is a process of changing patterns, the desired outcomes of any instructor training program should be stated in terms of what instructors should be able to do to bring about changes in student behavior. One of the best ways to get a student to change his behavior is to introduce him to a problem. The instructor must be able to select appropriate, interesting problems and assist the student to solve them effectively. Following are twelve questions that may be included on a check list for effective instruction.

(1) Did the instructor clearly formulate his objectives in desired student behavior?

(2) Did his students understand these objectives?

(3) Was he careful in selecting the instructional approach?

(4) Was he more concerned with his own activities or with student activities?

(5) Did he plan for student activity before, during, and after class?

(6) What was able to get students to do?

(7) How effective was the instructor in communicating ideas orally and in writing?

(8) Did he appeal to as many senses as possible?

(9) Did the instructor teach for understanding or was he content to provide technical information only?

(10) Was he concerned about how his students were learning or with improving their ability to think clearly?

(11) Did the instructor show concern for the welfare of his class?

(12) Did he check up frequently on the effectiveness of his instruction?

Boyd E. McCrory, Educational Consultant, Academic instructor Division, Air Command and Staff School, Air University, Maxwell Air Force Base, Alabama, spoke on **Methods and Materials for Determining Instructor Competence.**

The Academic Instructor Course at Air University is vitally interested in developing the instructor's ability to organize material clearly, project ideas vividly, and stimulate the students' desire to learn. Two phases of curriculum, practice speaking and practice teaching, that are designed to assist the instructor to develop those abilities, are discussed here.

The practice speaking consists of four talks of approximately five minutes each to a group of ten to twelve students and a faculty advisor. In the first talk, he simply introduces himself. This talk is not evaluated. In the second and third talks he develops a simple idea and is criticized by the faculty advisor and the listeners; the listeners submit a "Listener's Report" on these two. In the fourth talk, the student-instructor selects an idea and then devises questions which will lead the listeners to an understanding of the idea. This talk is also evaluated by the instructor.

There are five practice-teaching exercises that total over three hours. Each is presented to a different group and evaluated by a different instructor. The first four exercises are in the following teaching methods in the order listed: demonstration, performance, informal lecture, discussion by use of question, and the problem-oriented discussion. For the fifth exercise, the student-instructor may use any or all of the above methods for his presentation. Four of the presentations are criticized by a faculty member only. Emphasis is placed on the two-way process of communication in both types of exercises.

Each practice-teaching exercise is rated on the following: planning for the lesson, knowledge of subject, communicative ability, guidance and supervision in the classroom, teaching personality, and attainment of objectives.

There are other areas of the curriculum that also determine instructor competence. These two have been chosen for discussion here in keeping with the belief that those who cannot learn to speak cannot learn to teach.

Colonel Eugene E. Myers, Office, Secretary of the Air Staff, Headquarters USAF, discussed the importance the Air Force attaches to the whole problem of communication of ideas. Speakers on the panel had discussed specific programs, and Colonel Myers used his time to pull out of these a general summary statement of the total role of communication in the military establishment.

REPORT ON THE SECTIONAL MEETING: COMMUNICATION AT THE ELEMENTARY AND SECONDARY SCHOOL LEVELS

John J. Pruis

This is a report of a sectional meeting of the National Society for the Study of Communication, December 29, 1952, in the Sinton Hotel, Cincinnati, Ohio.

Russ L. Jenkins secured a large and diversified group of persons to contribute to the program and organized a very interesting session.

The chairman explained the purpose of the discussion and outlined the procedures to be followed. They were: (1) Each of three experts was given no more than five minutes to point up aspects of his field which had a direct relationship to the communication concept. Then, (2) a list of ten agenda questions was presented to the panel (the three experts and seven other participants) for a Circular Response type of discussion.

Dr. Theodore Landsman, Director of Counseling Services, Vanderbilt University, commented on the radically different communication structure to be found in the classroom which practices "student-centered learning." In this new-type classroom the teacher says very little, according to Dr. Landsman, except to react to what a student may say and to get others to respond to it also. His major point was that *acceptance* is the essence of communication in all human relationship, and that this is especially true in the classroom. In the classroom we will achieve maximum learning only when the group atmosphere reflects complete acceptance of each student by the teacher.

Dr. Dorris Allen, Chief Psychologist at Longview State Hospital in Cincinnati, discussing "personal adjustment," emphasized the necessity of considering the non-verbal communicative efforts of the individual as well as the verbal. Perhaps, Dr. Allen said, we should *not* verbalize everything. We may over-intellectualize, when actually we should strive for an integration of our thoughts and feelings within us and then permit our *feelings* to communicate themselves. This communication may differ markedly from our verbalizations about the same situation. Dr. Allen urged the audience to remember that in the ideal case, a speaker will communicate his feelings as well as his ideas.

The third expert was Dr. Guy H. Hill, Director of High School Cooperation at Michigan State College. Focusing on teacher training programs, Dr. Hill expressed the belief that we spend too much time teaching the How, the What, and the Why of teaching this subject or that grade, but we do not help our prospective teacher to learn how she may get to understand her students as persons, and likewise, how she can get the students to understand her as a person. Too many teachers do not "reach" their students, and per-

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haps they fail in this because they do not know how to work and live with others, even their students. Dr. Hill suggested that the effective teacher is the person who has sensitized herself to her pupils and who also has helped her pupils to sensitize themselves to her.

At this point, the agenda questions were presented. The panel decided to discuss first: "How can we orient teachers of English, at the secondary level, away from formal teaching of grammar *pre se* to a more comprehensive and realistic approach to language study?" Some of the comments offered by the panel were: "We're doing it." "First help the children to discover the difficulties which they have in common and then study language from the usage point of view." "We need to experiment with a new approach, and the public school must help by providing a permissive atmosphere in which teachers and pupils may work." "Since the bulk of our parents want a good school program, all we need is the leadership to get the ball rolling." "College entrance requirements must be met." "My sons don't know why they should learn grammar." "Grammar has become the *end* when it should be the *means*."

The second question discussed was: "What specific techniques can be used in teaching communication courses at the secondary level?" The first respondent suggested that, "It is a matter of attitude toward the process, rather than how to teach a course in communication." Other comments were: "The specific situational needs will determine the techniques which should be used." "Have the students write a precis of an article or a speech frequently. Get them to write ideas in the constructive form of model sentences." "Psychodrama." "Start with the pupil where he is, in terms of his ability to communicate, and bring him along up the ladder." "Teachers must listen more; then, reflect back to the class the feelings as well as the content of what the pupil says." "Group evaluation of the various individual efforts is a valuable technique."

At the conclusion of the session, all of the participants seemed to be enthusiastic about the meeting, and would have liked to continue. They were not actively interested at the beginning of the discussion period which followed the presentations of the experts. This reporter feels that the reason for this fact lay in their unfamiliarity with the rather complex format for the Circular Response 4:1-2 technique. Had the group been permitted either of two alternatives, the early response might have been more active. Had they been allowed to comment informally on the ideas presented by the experts, or to question them, the panel members would have felt more "at home" in this kind of situation, and probably would have spoken more freely. Or, had they been allowed to respond to the agenda questions informally (that is, without the restrictions of the Circular Response format), they probably would have had a livelier panel discussion. This is not to say that the session was unsuccessful, or even that it was less valuable than it might have been under the other plans. It was organized in this way in order to provide experience with this type of discussion. The situation has been

described to indicate a possible reason for the seemingly unfruitful discussion period. (It must be kept in mind that this report is highly condensed.) This reporter wished that more of the questions might have been discussed, and that the elementary school, with its unique problems, might have been considered by the group.

RESEARCH NOTES

Clyde E. Noble, "An Analysis of Meaning" *Psychological Review*, 59, 6 (November, 1952) 421-430.

Report of ". . . a theoretical-experimental analysis of the attribute of meaning in verbal stimulus material." The author attempts a behavioristic definition of meaning in terms of stimulus-response and habit.

A list of 96 words and nonsense-words was presented in print to 119 subjects. After reading each word, they were asked to write down in 60 seconds all the words that it made them think of. An index of stimulus meaning (m) was operationally defined in terms of the mean frequency of continued written associations. A psychological performance scale of m-values was developed which exhibited a range from 0.99 to 9.61 for the 96 words (from GOJEY to KITCHEN.)

The article includes a 31-item bibliography on theory and research in meaning. F. C.

REVIEWS

HOW TO IMPROVE ENGINEERING-MANAGEMENT COMMUNICATIONS. National Society of Professional Engineers, 1121 15th Street, Washington 5, D. C., 1952; pp. 48.

A nationwide survey of 350 industrial companies published by the National Society of Professional Engineers indicates that

> only 34 percent of the companies have any planned program of information and indoctrination to prepare engineers for future management leadership. This lack of adequate communications between company managements and their engineers is depriving industry of at least 60 percent of the potential managerial talent possessed by their engineers, the largest body of trained professional men in industry.

The survey report shows that 88 percent of the firms questioned seek the opinions and suggestions of their engineering people on general management. However, nearly half of the companies stated that they were not satisfied with their present methods of communication. Also, 86 percent of the companies reported that they receive requests from their engineers for information on management policies. The reported interests of engineers indicate that they want information on opportunities for advancement, expansion plans, new products and technical trends.

The report reviews briefly some techniques for, and research on improving group communication, and suggests a formula for improvement in engineering-management communication.

The suggested program includes a plan for an "Engineering Audit" which individual companies can apply to determine how effective are their particular communications with their engineers, and a plan for the review and test-for-effectiveness of communication methods and media, using the Audit findings as a guide. The third step suggested is the designation of a top management man to be responsible for effective engineering-management communication.

While it is encouraging to see engineers take an interest in their communication problems, the reviewer cannot but feel that this booklet, which is good as far as it goes, will give its readers the impression that the solutions to such problems are fairly simple. If the booklet succeeds in making engineers and management aware of their problems and of the possibility of solving them, it will have done a great service. On the other hand, if they take it as a complete handbook of how to improve communication, as the title suggests it is, they will most probably be disappointed.

F. C.

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EVERYDAY SPEECH. By Bess Sondel. New York: Barnes and Noble, Inc., 1950; pp. 189. $1.00.

Here is a textbook like no other textbook. A cartoon faces every page of text and each pair of pages stands alone—with only an unobtrusive set of nine chapter headings to group these ideas in bundles for the convenience of the serious student. The language is colloquial and personal. And yet, *in toto, Everyday Speech* is a carefully planned and entertainingly written project in adult education.

Though each pair of pages makes one point and can stand alone as a thought unit, the book follows a carefully thought out plan. The opening chapter—ten small essays with facing sketches—frowns on fine oratory ("the oratorical speech . . . is today's prize phoney") and public speaking ("the phrase 'public speaking' rates a public burial"), then urges the aspiring speaker to cultivate the open self that "looks out on the world and sees." Chapters two and three state basic principles of semantics ("the science that will help us increase the communication-value of our words") and apply them to everyday speech. Chapter four characterizes conversation, "the basis of all talk." Chapter five ("What To Do") discusses general preparation: reading, listening, learning, talking it over with a partner. Chapter six concerns specific preparation, particularly analysis and outlining, while chapter seven describes the struggle inherent in the immediate speaker-audience situation. Since the author believes so thoroughly in the speaker-audience interaction that underlies all effective communication, readers will not be surprised to find that the last two chapters consist of answers to specific questions, just as she might give them in the classroom or from the lecture platform.

Many individual nuggets, gems of sage advice or keen analysis, are scattered through the book: "In a life situation no one cares two hoots in hell about facts unless they touch him in some tender spot." (19) "Some of the most effective speakers I have heard didn't know the first thing about grammar." (79) ". . . beautiful phrases are fraught with danger . . . for the memorized speech is deader than last week's fish." (127) "Hell incarnate! The high school audience!"(149) "Dead pan, dead voice, this is a bad combination, and they usually go together." (163)

This unique little paper-bound handbook was prepared by Bess Sondel, lecturer in Communication at the University of Chicago, and Cissie Liebschutz, cartoonist. A good many people will pick this off the bookstore shelves—it costs only a dollar—who would never look twice at a conventional text in fundamentals of speech or public speaking. And those who read intelligently will gain considerable insight into the techniques of effective *Everyday Speech*, A.D. 1953.

Gregg Phifer, Florida State University

RESEARCH NOTES

In April last year, Mr. Charles Britton, Assistant Director of Esso Standard Oil's Research Division, spoke at Ohio State University's Conference on Communications Research and Training in Business and Industry, on the subject, "The Communications Research Job Ahead." There was much said at this conference about cooperation between universities and industry, especially with regard to communication research. As one reads Mr. Britton's speech, it soon becomes clear that he has a very different idea of research than exists in most universities. This is the sort of question he asks the university researchers to answer for him:

> How can supervisors be taught to think and to believe that part of their job involves maintaining good two-way communications? It will certainly be interesting to see what research may turn up here.
>
> What can be done by research to further improve this technique [of discussion]?
>
> How can management develop a communication point of view and acquire the desire to listen to employees as well as to their foremen . . . ? What can be done to make the supervisors better communicators?

Mr. Britton appears to see research as a process that results in new products, new methods, new techniques, new devices. What could be more logical? He works in industry, and that is what industrial research does. But the universities are used to answering such questions as, "What is the problem?" or, "Given two techniques, which is better?"

No one will deny the value of the typical experimental or descriptive study that most faculty members and their graduate students are doing. But one may well wonder whether the present philosophy of university research is adequate to cope with the kinds of problems that plague Mr. Britton. Suppose the universities were to say, "But we are not used to answering such questions. The academic system cannot allow creative research [for that is what Mr. Britton is asking for] as fulfilling M.A. and Ph.D. requirements. We cannot give degrees for imagination." Mr. Britton could no doubt be made to appreciate the reasoning behind this, but he still wouldn't have answers to his questions, and might ask them to send along their next research-trained graduate so he could put him to work on these problems.

Would the student be able to do the job? What has been done to develop in this student the imagination, ingenuity and creativity that he will need for Mr. Britton's kind of research? Where in his graduate curriculum was he introduced to such questions and where did he hear a discussion of the creation of new *methods*?

Obviously, the question that must be seriously and urgently asked is: *Where do we find out how to teach these things?* Hadn't we better start to work on this right away?

F. C.

The National Training Laboratory in Group Development will hold its usual three-week summer laboratory at Gould Academy, Bethel, Maine, from June 21 through July 11. Approximately 110 applicants will be accepted for this training and research program. Persons working with groups in a training, consultant, or leadership capacity in any field are invited to attend.

The NTLGD is sponsored by the Division of Adult Education Service of the NEA and by the Research Center for Group Dynamics of the University of Michigan.

For further information, write to the NTLGD at 1201 Sixteenth Street, N. W., Washington 6, D. C.

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